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THE

ENTOMOLOGIST'S
MONTHLY MAGAZINE:

74
2047
9

EDITED BY

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VOLUME LVII.

[THIRD SERIES—VOL. VII.]

“J’engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST’S SUCCESSORS).

33, PATERNOSTER ROW, E.C.4.

1921.

QL 461
.E 98

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET, E.C. 4.



72

© 2006 Blackwell Publishing Ltd, *Journal of Internal Medicine* 260: 101–108

22.33 11/25-

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EXPLANATION OF PLATES.

Plate I.—British species of *Cathormiocerus* (see pp. 100-102).

„ II.—Wings of Neuroptera from Mesopotamia (see pp. 213-225).

ERRATA.

Page 14, line 5, from top, *for* “*Coccinell*” *read* “*Coccinella*.”

„ 27 „ 23 „ „ *for* “distal” *read* “costal.”

„ 51 „ 28 „ „ *for* “*Limentis*” *read* “*Limenitis*.”

„ 156 „ 2 „ „ *for* “T.” *read* “J.”

„ 160 „ 13 „ bottom, *for* “It it” *read* “It is.”

„ 202 „ 7 „ „ *for* “*crataegus*” *read* “*Crataegus*.”

The Annual Subscription for 1921 is 15/-.

Third Series, No. 73.]
[No. 680.]

JANUARY, 1921.

[PRICE 2/- NET.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LVII.

[THIRD SERIES—VOL. VII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.— January 19th (Annual Meeting). February 2nd.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

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CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.— This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTEHAM, Summersdale, Chichester.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE:

VOLUME LVII.

[THIRD SERIES, VOL. VII.]

NOTES ON THE INDIAN SPECIES OF *HYPOPHLOEUS*, FABR. WITH
DESCRIPTIONS OF NEW SPECIES.

BY K. G. BLAIR, B.Sc., F.E.S.

(Published by permission of the Trustees of the British Museum.)

In addition to the National Collection in the British Museum, this paper is based on the extensive Indian material in the collections of Messrs. H. E. Andrewes and G. C. Champion, together with that supplied by the Forest Zoologist, Dehra Dun, India, at whose request the determination of the Indian species of this genus was undertaken. The types of new species, when not already in the National Collection, have been generously presented by their respective owners.

The beetles belonging to this genus are found beneath the bark of dead or dying trees very frequently in association with different species of "bark-beetles," *Scolytidae*. It is probable that the beetles, or more likely their larvae, are predaceous on the larvae of the *Scolytidae*, though possibly they frequent their galleries only for the purpose of feeding on the exuding sap and detritus contained in them (Stebbing, "Indian Forest Insects," 1914, pp. 236, 510). It is very desirable that accurate observations should be made to determine this point.

Key to the Indian Species of Hypophloeus.

- 1 (6) Thorax obviously longer than broad, widest near apex; colour uniformly castaneous 2.
- 2 (3) Anterior angles of thorax not prominent; size larger (over 6 mm.) (s.-gen. *Hypophloeus* in sp.) 1. *birmanicus*, sp. n.
- 3 (2) Anterior angles of thorax produced forwards; size smaller (less than 5 mm.) (s.-gen. *Stenophloeus* nov.) 4.
- 4 (5) Clypeus simply convex in middle; anal segment with apical tubercle 2. *filum* Fairm.

- 5 (4) Clypeus with median pair of longitudinal elevations; anal segment with transverse depression 3. *cephalotes* Geb.
- 6 (1) Thorax not longer than broad, widest about middle, sides arcuate, anterior angles not produced (s.-gen. *Paraphloeus* Seidl.) 7.
- 7 (14) Elytra uniformly flavous or rufo-testaceous.. 8.
- 8 (11) Head and thorax concolorous with elytra .. 9.
- 9 (10) Distance between eyes greater than twice width of one of them: thorax with feeble depressed area in front 4. *ulomoides*, sp. n.
- 10 (9) Distance between eyes but little more than width of one of them; thorax not depressed in front 5. *gentilis* Lew.
- 11 (8) Head and thorax brown or piceous 12.
- 12 (13) Thorax without flavous border; stouter, elytra not more than twice as long as together broad 6. *flavipennis* Mots.
- 13 (12) Thorax with narrow flavous border; narrower, elytra two and a half times as long as broad 9. *limbaticollis*, sp. n.
- 14 (7) Elytra not uniformly coloured 15.
- 15 (18) Elytra flavous, more or less marked with brown towards apex; antennae short, joints 5-10 strongly transverse 16.
- 16 (17) Head and thorax rufous; elytra only twice as long as broad, the dark markings usually confined to an elongate sutural patch towards apex, but sometimes whole apical area clouded 7. *stebbingi*, sp. n.
- 17 (16) Head and thorax piceous brown; elytra two and a half times as long as broad; apical third brownish 8. *tripartitus*, sp. n.
- 18 (15) Elytra dark with yellow markings; antennae more slender, gradually thickened towards apex..... 19.
- 19 (20) Elytra each with two yellow spots or fasciae; legs fulvous 10. *luteomaculatus* Pic.
- 20 (19) Elytra each with one yellow spot towards base; legs dark 11. *andrewesi* sp. n.

1. *Hypophloeus birmanicus*, sp. n.

Elongate, cylindrical, shining, rufo-castaneous. Antennae stout, scarcely reaching beyond apex of thorax. Thorax longer than broad, the sides nearly straight, feebly convergent towards the base from a little behind the anterior angles, the latter obtuse, not prominent; posterior angles almost rectangular; disc convex, rather strongly but irregularly punctate, with occasional spaces free of punctures; elytra more than twice as long as wide, striate punctate, with a row of rather finer punctures down the middle of each interstice; the first and third interstices rather wider than the rest, and irregularly punctate. Last abdominal segment with two median parallel ridges more elevated towards the apex. Legs stout, all tibiae strongly thickened from base to apex.

Length 7 mm.

Hab. Burma, Ruby Mines District (*Doherty*).

A single specimen. Closely resembles the European *H. unicolor* P. and M. (*castaneus* F.) in size and form, but a little brighter in colour,

the prothorax more strongly and densely punctate; elytra, on the other hand, more finely punctate. The pair of median raised elevations on the last abdominal segment is possibly a male character only.

2. *Hypophloeus filum* Fairm.

Ann. Soc. Ent. France, 1893, p. 29; Gebien, Arch. für Naturgesch. 1913, Abt. A, Heft 9, p. 28.

Originally described from Indo-China. Gebien gives further details of a species so identified by him from Formosa. Two specimens from Ceylon (Kandy, ii.1882, *G. Lewis*) in the British Museum and one from the Nilgiri Hills (*H. L. Andrewes*) in Mr. Andrewes's collection agree well with individuals from Formosa that are without doubt the insect so identified by Gebien.

Readily recognised among Indian *Hypophloeini* by its narrow cylindrical form, the prothorax rather longer than broad, with the anterior angles seen from above slightly prominent forwards. The clypeus is evenly convex in the middle, punctured like the frons, the last abdominal segment strongly punctate, with a small apical tubercle.

In form and colour *H. filum* resembles *H. cephalotes* Geb. (*infra*), but it lacks the clypeal elevations of that species, and has an apical tubercle on the last abdominal segment.

H. analis Geb., known from the Philippine Islands, Formosa, etc., is an allied species, distinguished by having a round depression and no apical tubercle on the last abdominal segment. It has not yet been identified from India.

3. *Hypophloeus cephalotes* Gebien.

H. cephalotes Gebien, Arch. für Naturgesch. 1913, Abt. A, Heft 9, p. 29, fig. 10.

H. cornutus Pic, Mél. exot.-ent. fasc. xi, 1914, p. 16.

H. cephalotes was described from Formosa, while *H. cornutus* was from Malacca, but the species appears to have rather a wide distribution, and in the British Museum collection is represented by specimens from Kumaon (*H. G. Champion*), Ceylon (Dikoya, xii.1881, Balangoda, iii.1882: *G. Lewis*), the Andaman Islands, Tenasserim, Sumatra, and Java, and from Dorey, New Guinea.

It is of a uniform reddish colour, has the thorax considerably longer than wide, the sides almost straight, slightly convergent from close behind the apex to the base, and the anterior angles produced forwards. The clypeus bears two parallel longitudinal elevations near the middle.

In some individuals (probably ♀) these are much less developed than in others.

4. *Hypophloeus ulomoides*, sp. n.

Robust, rufo-testaceous; shining. Eyes rather distant, separated above by a space greater than twice the width of one of them; antennae stout, not extending beyond middle of thorax, joints 5-10 strongly transverse; thorax slightly wider than long, the sides, apex, and base all arcuate, the apex feebly emarginate in the middle, anterior angles rounded, basal angles obtuse with a slight lateral tooth; disc moderately strongly, rather irregularly, punctate, with a large feebly depressed or flattened median area towards the apex. Elytra about twice as long as together wide, apparently confusedly punctured, owing to the punctures of the intervals being very similar to those of the striae. Anterior tibiae gradually thickened towards apex, external apical angle scarcely produced.

Length 4 mm.

Hab. Punjab, Rawalpindi (*O. H. Walters*: l.v.1912, ex *Pinus excelsa*, in Dehra Dun Coll.).

Larger and more robust than *H. gentilis* Lewis (*infra*), with the thorax more sparsely and irregularly punctured, and distinguished by the anterior median depressed area, somewhat suggesting the excavation so situated in the ♂♂ of many species of *Uloma*. The eyes are also much smaller and more widely separated above than in *H. gentilis*, the space between them in the latter species being but little wider than the greatest width of one of them.

5. *Hypophloeus gentilis* Lewis.

Corticeus gentilis Lewis, Ann. & Mag. Nat. Hist. (6) xiii, 1894, p. 468.

Hypophloeus robustus Gebien, Arch. für Naturgesch. 1913, Abt. A, Heft 9, p. 29.

A series, including both sexes, from Tonkin (*R. Vitalis de Salvaza*), agrees well with the description of *H. robustus* Gebien, from Formosa. The type and one other specimen of *C. gentilis* Lewis, from Japan, both ♀, belong to the same species. Mr. Andrewes has two specimens, both ♀, from S. India (Nilgiri Hills, *H. L. Andrewes*, and Kanara, and S. Bombay, *T. R. D. Bell*).

H. gentilis is very closely allied to *H. flavipennis* Mots., both species having similar sexual characters in the ♂, viz. a median longitudinal ridge on the clypeus, and a round area between the eyes much more finely punctate than the rest of the frons. *H. gentilis* differs, however, from *flavipennis*, apart from its uniformly rufous colour, in

this finely punctate patch on the head being scarcely raised, while in *H. flavipennis* it forms a distinct elevation. Further, the anterior margin of the thorax is completely rounded, while in *H. flavipennis* it is feebly but distinctly sinuate or emarginate before the anterior angles, which are consequently more pronounced.

6. *Hypophloeus flavipennis* Mots.

Motschulsky, Etudes Entom. viii, 1859, p. 99; Stebbing, "Indian Forest Insects," 1914, p. 236, fig. 162, and p. 510.

Originally described from Ceylon, the species is common also in the N.W. Himalaya (*Stebbing, Champion*, etc.) and in the Nilgiri Hills (*H. L. Andrewes*).

The thorax has the anterior margin arcuate in the middle but slightly sinuate towards the sides, so that the anterior angles are more sharply defined than in the majority of this group, and feebly projecting, almost as in the European *H. fraxini*. In the ♂ the clypeus has a median longitudinal ridge, while between the eyes is a small round elevated area very much more finely punctate than the rest of the frons.

7. *Hypophloeus stebbingi*, sp. n.

Hypophloeus, sp. n., Stebbing, "Indian Forest Insects," 1914, p. 236, fig. 162 A, and p. 527.

Rufous-flavous, the legs and elytra paler, suture narrowly piceous, with a broader elongate piceous expansion towards the apex; this patch tapers gradually towards the middle of the suture, but ends much more abruptly behind, a little before the apex. In some specimens this patch is suffused and expanded to include the whole apical area.

Head moderately strongly punctured between the eyes. Clypeus convex in the middle, with a broad longitudinal depression towards each side, more finely and sparingly punctate than the frons. Antennae (omitted in Stebbing's figure) short and compact, joint 3 scarcely longer than wide at apex, 4-10 transverse, 5 *et seq.* notably thicker than the basal joints. Prothorax slightly wider than long, the sides and both anterior margin and base arcuate, finely bordered; anterior angles rounded, not at all prominent, basal angles obtuse with a small lateral tooth; disc convex; rather finely and sparsely punctate. Elytra about twice as long as together broad, rather finely punctate, but the rows of punctures difficult to discern owing to punctures of the same size on the interstices; the striae are, however, indicated by rows of dark patches in a lattice-work of paler colour, an effect possibly only visible in dried specimens. Pygidium darker. Anterior tibiae gradually expanded to apex, exterior apical tooth acute but not markedly prominent.

Length 3 mm.

Hab. Sitoli, C. Almora, U.P. (*H. G. Champion*: viii.1919, "in plantation trees killed by *Peridermium*"), Bhowali, Kumaon (*H. G. Champion* and *A. D. Imms*, 17.ii.1913, "under bark of *Pinus longifolia*"), Jaunsar (*E. P. Stebbing*, *loc. cit.*, in galleries of the Scolytid beetle *Polygraphus longifolia* in *Pinus longifolia*).

Allied to *H. flavipennis* Mots. in build and form of prothorax, but the anterior angles of the prothorax are even less marked, the puncturation finer, and the colour different. One specimen, probably ♂, has a transversely oval, raised area on the clypeus, but no trace of the median longitudinal ridge found in the ♂ of *flavipennis*.

8. *Hypophloeus tripartitus*, sp. n.

Elongate, narrow, the head, thorax, and antennae brownish, the elytra and legs flavous, the former with the apex broadly brown. Thorax about as long as wide, all its margins arcuate, anterior angles completely rounded, basal angles obtuse; disc convex, rather strongly and closely punctate. Elytra two and a half times as long as wide, rather strongly punctate, the linear arrangement of the punctures more evident than in *H. flavipennis*. The apical brown patch on the elytra occupies about one-quarter of their length, is not sharply defined, and extends forward in a triangular form along the suture, where it meets a much paler and indistinct triangular scutellar patch.

Length $2\frac{1}{2}$ mm.

Hab. Nilgiri Hills, Oucherlony Valley, alt. 3000 ft., June (*A. K. Weld Downing*, in *Coll. II. E. Andrewes*).

Allied to *H. stebbingi* (*supra*), but smaller and narrower in proportion to its length than most other species, with rounded anterior angles to the pronotum.

9. *Hypophloeus limbaticollis*, sp. n.

Narrow, elongate, flavous, with the head, thorax, and pygidium largely brown. Head with the front of clypeus and inner margin of the eyes paler, rather strongly but not closely punctate; antennae piceous, extending beyond middle of thorax, joints 5-10 strongly transverse; thorax brown above with a narrow flavous border all round, about as long as broad, sides nearly straight for the greater part of their length, arcuately rounded towards base and apex, anterior angles rounded, posterior obtuse but distinct, disc sparsely punctate with a median impunctate line, the punctures rather elongate and finer than those of the head; elytra nearly two and a half times as long as broad, striate-punctate, the first, third, and fifth intervals with a median row of widely spaced punctures. Underside and legs flavous.

Length 3 mm.

Hab. Nilgiri Hills, Oucherlony Valley, alt. 3500 ft., January (*H. L. Andrewes*; "in dead *Ficus*").

Most nearly allied in its narrow elongate form to *H. tripartitus*, but differs in its colour-pattern and in the prothorax being much more sparsely punctate.

10. *Hypophloeus luteomaculatus* Pic.

Mélanges exot.-ent. fasc. xi, 1914, p. 15.

Piceous, shiny; elytra with an arcuate flavous spot extending from the humerus nearly to the suture, and another large spot occupying a large part of the discal area of the apical half of each elytron. Antennae fuscous, more gradually thickened than in *H. flavipennis*, joints 3-7 gradually increasing in thickness, 7-10 being of equal thickness and strongly transverse, the last joint a little narrower, about as long as wide. Thorax with the sides and apex arcuate, the apical angles obtuse and distinct but not produced. Legs flavous.

A long series from the Nilgiri Hills, Ouchterlony Valley (*H. L. Andrewes*; "in dead trees, *Ficus*, etc."), in Mr H. E. Andrewes's collection, agrees with Pic's brief description. Pic's locality is merely "Indes".

The extent of the yellow spots on the elytra varies considerably, so that the markings may frequently be described as a common black sutural fascia expanding in the scutellar area, and to include the whole apex, intersected by a median transverse black fascia with an anterior extension along the outer margin.

11. *Hypophloeus andrewesi*, sp. n.

Aeneo-piceous, elytra each with a transverse oval flavous spot on the disc at about $\frac{1}{4}$ of their length. Head densely and strongly punctured, clypeus rather rounded in front, and clypeal sutures not very pronounced. Antennae reaching beyond middle of thorax, joint 3 longer than broad, 4 about as long as broad, 5-10 becoming gradually wider and more strongly transverse. Thorax slightly wider than long, sides, apex, and base all arcuate, both angles obtuse; disc evenly convex, strongly but not very densely punctate. Elytra slightly more than one and a half times as long as broad, rather wider at the middle than behind the shoulders, distinctly striate-punctate, but rows of punctures not regular, sometimes confused. Legs piceous, anterior tibiae slightly thickened from base to apex, external apical angle not produced.

Length $2\frac{1}{2}$ mm.

Hab. Nilgiri Hills, Hulikal, alt. 6000 ft., May and June (*H. L. Andrewes*).

Most nearly allied to *H. luteomaculatus* Pic, which it resembles in the structure of the head and antennae, as well as in the general type of coloration, but differs in colour-pattern and in the punctures of the elytra being much coarser and more strongly impressed.

December 3rd, 1920.

NOTES ON MELANDRYIDAE (4).

(Continued from Vol. LII, p. 157, 1916.)

BY G. C. CHAMPION, F.Z.S.

I have recently had occasion to examine the type of the Japanese genus *Omineus* Lewis [Ann. & Mag. Nat. Hist. (6) xvi, p. 119, July 1895] and find that it belongs to the Heteromerous-group "Myeterina," as defined by me (Ent. Mo. Mag. lii, p. 101). The author referred the genus to the Malacoderm-group "Melyrini," the 5-, 5-, 4-jointed tarsi notwithstanding, which are clearly shown in his fig. 10 on plate vi.* The type of *Omineus*, *O. humeralis* Lewis, from Japan, is so closely related to *Phalysius* Champ., type *P. caeruleus* Champ., from Perak (*l.c.* pp. 150, 157, pl. ii, figs. 15, 15*a*), that the latter generic name may have to be sunk as a synonym when other new forms are discovered, the differences being partly bridged over by a Singapore insect recently received by the British Museum. The Japanese *O. humeralis* has extremely short antennae, and a narrow, bi-impressed prothorax, which is more feebly margined at the base than in *P. caeruleus*; the ventral ♂ characters, however, are very similar, *O. humeralis* having a prominent fulvo-pubescent tubercle in the middle of the second ventral segment (not mentioned by Lewis), which is represented by a tuft of fulvous hairs in *P. caeruleus*. The opportunity is here taken to describe the above-mentioned Singapore insect. Mr. Baker has also sent various Malayan species of the allied genus *Conomorpha* to the Museum, but these must be left unnamed for the present.

Omineus incaus, n. sp.

♀. Elongate, narrow, widened posteriorly, rather convex; piceous, the labrum, the basal joint of the antennae, and the legs in part, reddish, thickly clothed with fine cinereous pubescence; the upper surface densely, very finely, subrugulose punctate, subopaque, the elytra with an indication of shallow impressed lines on the disc, the ventral surface shining and with the puncturing a little sparser. Head short, broad, the eyes extremely large; antennae very short, extending to slightly beyond the anterior margin of the prothorax, thickened outwards, joints 7-10 strongly transverse, 1 and 2 also stout. Prothorax short, slightly broader than the head, strongly transverse, rounded at the sides, very little wider at the base than at the apex, transversely, interruptedly bi-impressed across the middle of the disc, the base bisinuate and finely margined to near the hind angles, which are obtuse. Scutellum transverse. Elytra very long, at the base a little broader than the prothorax, widest at about the apical third, separately rounded at the tip. Basal joint of posterior tarsi as long as the others (2-4) united.

Length 4 mm.

* The references to figs. 10 and 11 are transposed in the text, pp. 119, 122, and also on the plate.

Hab. Singapore (*C. F. Baker*; No. 4765).

One specimen, presented by Mr. Baker to the British Museum in 1919). This insect agrees with the Japanese type, *O. humeralis* Lewis, in having extremely short antennae, differing from it in the larger, less prominent eyes, the broader prothorax, which is rounded at the sides, the broader scutellum, and the immaculate elytra. The very short prothorax, etc., separate *O. incauus* from *Conomorplus*.

Hoisell.

November, 1920.

TWO NEW SPECIES OF BEES OF THE GENUS *SPHECODES*.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

The two species of *Sphecodes* described below were set aside some years ago as being probably new, but the literature on the subject being so scattered in various publications no satisfactory conclusion was reached. Recently an extensive and important work by Dr. Reinhold Meyer has been published in which all the known species of the genus have been described, and I am unable to identify mine with any of these. Unfortunately, I have only the male sex of either species.

Sphecodes kershawi, sp. n.

Black; the apex of the first and the whole of the second and third abdominal segments ferruginous. Tarsi subtestaceous, the metatarsi darker, the knee-joints reddish.

Face in front view very wide, very strongly rounded on the vertex, densely clothed below the antennae and along the margins of the eyes with whitish appressed pubescence, the eyes distinctly convergent. Clypeus very densely, subrugosely punctured; the front and vertex with excessively dense, reticulately rugose sculpture (produced, no doubt, by dense punctures, which are, however, hardly distinct as such), the surface duller and the sculpture notably finer than that of the mesonotum. Antennae rather long, the fifth joint being lightly though quite evidently elongate, longer than the transverse 3rd joint and almost equal to this and the 2nd together; in front the flagellar joints are not flattened or impressed at the base, but are without hair-bands, being convex and pubescent all over.

Pronotal angles acute and prominent. Mesonotum with very coarse rugose sculpture, due to coarse close punctures, more or less running into one another, these being much finer at the sides than on the disc; the edges dividing the punctures, as well as the bottom of the punctures themselves, shining; scutellum with very dense sculpture, like that of the mesonotum, but evidently less coarse, the punctures being finer than those on the middle of the latter. Anterior area of the propodeum shining and very coarsely reticulately,

rugose, semilunate, strongly margined behind, the lateral areas also coarsely rugose and margined behind, the posterior face duller and less coarsely rugose, the rugosity being to a large extent due to ill-defined punctures. At the sides the propodeum is longitudinally rugose in front, the mesopleura densely, coarsely reticulate.

Abdomen subtriangular or wedge-shaped, the segments decreasing in width regularly from the basal one, which is finely and somewhat densely punctured over most of its surface, the punctures of very different sizes, the finest extremely minute; second and third segments also densely or at least very copiously punctured, their apical impressions wide, shining, and impunctate, that of the basally constricted 2nd segment hardly less wide in the middle than the part in front of it; 4th segment much more finely punctured than the preceding, the punctures ill-defined.

The genital armature has the stipites elongate and only moderately wide, the surface microscopically longitudinally rugulose, the laciniae are long, about two-thirds as long as the stipites (including that part of them which is produced backwards along the inner margin of the stipes). In dorsal aspect the darker (more chitinous) part is triangular and linearly produced apically, the paler (more membranous) inner part is emarginate on the inner side and is produced beyond the other. On the outer margin at the base are longish hairs and the surface is also hairy, but between these hairs are inconspicuous or few. Seen from the side the laciniae appear emarginate at the apex, and when viewed so that the inner membranous portion and the outer side (which are in planes more or less at right angles to one another) are seen together, the outline is somewhat spoon-shaped.

Wings infusate, brownish, clearer at the base. Length about 9 mm.; expanse about 15 mm. (♂.)

Hab. CHINA, Macao (*J. C. Kershaw*).

Allied to *S. scabricollis* Wesm., and perhaps more closely to *S. fumipennis* Sm., or some of the described Japanese species of which I do not possess specimens for comparison.

Sphecodes abnormis, sp. n.

Black; the first three abdominal segments ferruginous, the mandibles yellowish testaceous, more red apically. Tarsi testaceous, the hind metatarsi dark on the dorsal edge. There is a dark marking on the disc of the basal abdominal segment and a pair, placed close together, on each side of the basal declivous portion, but it is not certain that these may not be due to internal post mortem changes. The wings are distinctly infusate, but translucent, the basal cells more hyaline.

Face very wide, transversely oval, densely clothed with white hairs up to about the line of the upper margin of the eyes, the vertex exceedingly strongly rounded, so as to be very greatly raised behind the ocelli; the eyes large, clothed all over, but not very densely, with erect hairs. Antennae rather short, the 2nd and 3rd joints very strongly transverse and of about the same length, the fourth elongate, appearing as long or rather longer than the two

preceding together, but not twice as long as wide, the following flagellar joints very convex in front, pubescent all over, without a distinct basal impression or flattening, and with no hair-bands.

Front of the head above the antennae densely hairy, with shallow sub-rugose punctures; above this, between the ocelli and the upper margin of the eyes, the punctures become less close and more distinct, but they are feebly impressed and not coarse; behind the ocelli the sculpture of the vertex is dense, fine, and obscure.

Mesonotum somewhat shining, for the most part densely and coarsely and somewhat rugosely punctured, the punctures shallow; posteriorly over a considerable area they are more remote and very distinct, so that on this part the sculpture is like that of most of the surface of the scutellum. At the sides between the tegulae and the lateral furrows the sculpture is fine and confused.

Anterior area of the propodeum with about 6 or 8 long and very strong, well-sculptured, longitudinal wrinkles—there are two or three short ones on each side exterior to these—with few transverse connections, but connected apically so as to form a strongly and sharply raised, irregular posterior margin, the spaces between the wrinkles smooth and shining; the lateral areas also have a strong, raised margin and are very shining. The posterior surface of the propodeum is, comparatively, feebly sculptured, the sculpture more granulate in appearance; the sides have strong transverse or oblique wrinkles; the mesopleura are so densely clothed that the rough (apparently reticulate) sculpture is seen with difficulty.

Abdomen shining, wedge-shaped, narrowing gradually from the apex of the first segment, which has a very distinct and fine close puncturation, the punctures becoming more remote on the disc, where there is a very narrow impunctate line, in certain lights having the appearance of a scarcely perceptible carination; along the apical margin the segment is smooth and impunctate. Second segment a good deal like the first in its sculpture, remotely punctured in the middle, much more densely towards the sides, its apical impression impunctate, its base deeply and abruptly depressed or constricted; on the third and following segments the puncturation becomes sparse and indefinite.

Apical ventral segment very finely, remotely punctured, with no trace of a depression, nor of a smooth median line. Length about 8 mm., expanse about 14 mm. (♂.)

Hab. "EAST INDIES."

I have not examined the genitalia of the single specimen described, and the locality is not definitely known, the label only bearing the words "East Indies," but the absence of distinct pubescent bands on the front of the flagellar joints of the antennae and the hairy eyes will facilitate its identification.

Newton Abbot,

November 17th, 1920.

Henoticus germanicus Reitt. and *H. serratus* Gyll.—*synonymical note, etc.*
—I have taken the opportunity of sending one of the specimens of this species found in jam in London (one of those recorded in the last, December 1920, Number of this Magazine) to Mr. H. S. Barber, of the U.S. Dept. of Agriculture, Bureau of Entomology, Washington, for comparison with N.-American forms, having long had a suspicion that the insect was of American origin. This was suggested by Dr. Everts in 1912 (*Tijdschr. v. Ent.* lv, p. 236), as stated by Deville (*Bull. Soc. Ent. Fr.* 1913, p. 228) and myself (*Ent. Mo. Mag.* 1913, p. 176). Mr. Barber informs me that my surmise is correct, and that *H. germanicus* Reitt. (1906) is inseparable from *H. californicus* Mann. (*Bull. Mosc.* xvi, p. 256, 1843), the latter having been redescribed at length by Casey in 1900 (*Journ. N. York Ent. Soc.* viii, p. 101). Moreover, he has sent a specimen of *H. californicus*, found in dried fruit at Sonoma, California, and several of the Holarctic *H. serratus* Gyll. (= *Paramecosoma denticulata* Lec. 1850), taken at Marquette, Michigan, for examination, these insects agreeing with our *H. germanicus* and *H. serratus* respectively.* My eldest son, H. G. Champion, met with both species in the Western States in 1915, *H. californicus* at Ashland, Oregon, and *H. serratus* at Missoula, Montana, these specimens having been overlooked by me till now. There can be no doubt that *H. californicus* has been imported from the United States into Holland, Britain, etc., in dried fruit (apricots, etc.), some of which is probably converted into jam soon after its arrival. It may, however, attack the mould (*Eurotium herbariorum* Link. = *Aspergillus glaucus* Link.) often found upon the surface of the jam and not the jam itself.—G. C. CHAMPION, Horsell: December 8th, 1920.

A room infested with Lathridiidae.—Since the discovery of *Lathridius bergrothi* Reitt. in this country, Coleopterists have watched its spread as shown by records from various localities, but I think the following note will be of special interest:—On October 1st of this year Mr. J. Musham, F.E.S., sent me some small *Coleoptera*, swept up in a room by an anxious housewife, who feared they were “vermin.” I found these to be all *L. bergrothi*. A few days later Mr. Musham went to inspect and sent me the following particulars. The house, an isolated old stone building, was situated at Kent’s Bank, Grange-over-Sands, Lancashire, stood in a rose-garden, and faced the sea. On entering the kitchen, the only room infested, he found the walls alive with small beetles which were hurrying about in all directions, several to the square inch, although very large numbers had been removed with brush and shovel. Mr. Musham sent me over some of the sweepings from the walls, etc., and these I found consisted of *L. bergrothi*, *Coninomus nodifer*, and *Enicmus minutus*, in the respective proportions of about 6, 1, 1; and mixed amongst the débris of wall-paper and colour-wash were a number of active pale larvae and pupae, which, unfortunately, soon dried up and died. Mr. Musham reported that the late tenant of that portion of the house “had not been house-prond.” There was no stable near or stores of any kind, and he could give no explanation of such a remarkable assembly of these insects. Mr. Donisthorpe kindly confirmed the identification of *L. bergrothi*.—WILLIAM WALLACE, Sismore House, Hainton Avenue, Grimsby: November 20th, 1920.

* The series of *H. serratus* in the British Museum includes three examples from the Hawaiian Isls. ex Blackburn. The insect figured by Reitter in the “Fauna Germanica,” vol. iii, Plate 89, figs. 20 a, b, under the name *Emphytus glaber*, is intended to represent *H. serratus*.

Agabus melanarius Aubé in *Devonshire*.—On September 23rd last, whilst shaking *Sphagnum* in a boggy spot on Haldon Moor, near Teignmouth, a specimen of this rare species put in an appearance. So far as I know there are only two previous records for this country—a single specimen in the Power Collection, taken in the Orkneys by Mr. Syme, and Mr. Bold's record of a specimen from Long Benton, Northumberland, which Fowler apparently regards as requiring confirmation.—E. C. BEDWELL, Bruggen, Brighton Road, Coulsdon: December 7th, 1920.

Henoticus germanicus Reitt, in *London*.—At the end of November a friend presented me with a small live beetle, found in a shop in the City, which on examination proved to be the above species.—E. C. BEDWELL.

Coleoptera in Guernsey.—The Channel Isles receive unequal treatment at the hands of naturalists, for whereas the botanist, the conchologist, and the marine zoologist accept them as contributors to the British list, the entomologist will have none of it. Of course, the latter point of view is correct, and a glance at the map will suffice to show that the connection with Great Britain is purely political. Excellent work has been done in Guernsey with the Lepidoptera, but I fancy that the Coleoptera have not received adequate attention, and the only list I have seen is the antiquated one in Ansted's "Channel Isles" (1862), communicated by Dr. Lukis.

The following species were taken in the summer either of 1919 or 1920. Guernsey only is referred to, unless otherwise stated.

Cicindela campestris L. Sparingly throughout Guernsey and Sark.

Panagæus crux-major L. Damp ground near Moulin Huet, at the roots of *Gunnera scabra*.

Dyschirius globosus Hbst. Common.

Pterostichus madidus F., and *P. nigrita* F. Generally distributed; *P. versicolor* St. Common.

Amara tibialis Pk. Very common on the sandhills.

Calathus mollis Marsh., and *C. melanocephalus* L. Very common: *C. cisteloides* Pz. S. Sampson's.

Anchomenus albipes F. Very common in damp ground.

Dromius linearis Ol. Peterport.

Haliphus lineatocollis Marsh. Near Ivy Castle.

Hydrovatus clypeatis Sharp. Lanresse Common, in ponds.

Hyphydrus variegatus Aubé. Generally common, especially in quarry-ponds.

Coelambus inaequalis F. With the last.

Hydroporus lepidus Ol. Stream near Ivy Castle.

Agabus bipustulatus L. Very common; *A. nebulosus* Forst. Pond by Gde. Havre.

Gyrinus natator Scop. Common.

Philodrus maritimus Pk. Grande Mare.

Helophorus aquaticus L. Grande Mare; *H. brevipalpis* Bed. Very common.

Sphaeridium scarabaeoides L. Common on the coast.

Cercyon flavipes F., and *pygmaeus* Ill. Common.

Homalota sor dida Marsh. Common.

Gnypeta labilis Er. Common.

Quedius tristis Gr. Vale Road.

- Ocyrops olens* Müll. Common in Guernsey, Herm, and Sark. Swarming one day on the road in Sark near the Coupée; *O. ater* Gr. S. Sampson's.
- Bledius fracticornis* Pk. Lancrese Common, rare.
- Coccinell 11-punctata* L., and *C. 7-punctata* L. Common in Guernsey, Herm, Sark.
- Micraspis 16-punctata* L. Common in Guernsey, Herm, and Sark.
- Rhizobius litura* F. Also common in all three islands.
- Meligethes aeneus* F. Abundant in the three islands.
- Elmis volkmari* Pz. Stream near Ivy Castle on *Callitriche*.
- Dryops luridus* Er. Common with the last; *D. algericus* Lucas. Damp ground on the coast.
- Copris lunaris* L. Vazon Bay.
- Aphodius fossor* L., and *A. funetarius* L. Common in Guernsey and Herm.
- Geotrupes typhocus* L. Found dead commonly in Guernsey and Sark.
- Rhizotrogus solstitialis* L. Gouffre.
- Melolontha vulgaris* F. Sparingly everywhere.
- Cetonia aurata* L. Guernsey on the south cliffs, Sark at the Coupée and Gouliot caves; *C. morio* F. Moulin Huet.
- Iacon murinus* L. Not uncommon.
- Cardiophorus erichsoni* Bayss. Guernsey.
- Telephorus bicolor* F. Common.
- Ptilothrix nobilis* Ill. Common in flowers on the cliffs of Guernsey and Sark.
- Anobium domesticum* Fourc. In houses.
- Cryptocephalus vittatus* F. Guernsey on the south cliffs, Sark at the Port du Moulin and Creux Derrible, in *Hieracium* flowers.
- Timarcha violaceonigra* De G. Common on the sandy coasts of Guernsey and Herm.
- Chrysomela haemoptera* L. Abundant in Guernsey, Herm, and Sark.
- Prasocaris junci* Br. Gouffre on watercress; *P. phellandrii* var. *sii* Weise. Grande Mare.
- Aphthona nonstrata* Goeze. Common on "Yellow Iris."
- Chaetocnema aridella* Pk. Not uncommon.
- Psylliodes chalconera* Ill. Moulin Huet on *Raphanus maritimus*.
- Cassida vittata* Vill. Vazon Bay.
- Helops striatus* Fourc. W. coast of Guernsey, common.
- Cistela murina* L. Common.
- Oedemera luidi* Marsh. Common in flowers on Guernsey, Sark, and Herm.
- Mordellistena brevicauda* Boh., *M. pumila* Gyll., and *M. parvula* Gyll. Gouffre in flowers.
- Meloe proscarabaeus* L. Guernsey and Herm, scarce.
- Apion aeneum* F., *A. radiolus* Kirby, and *A. rufirostre* F. Common on mallow; *A. semivittatum* Gyll. S. Sampson's on *Mercurialis annua*.
- Otiorrhynchus sulcatus* F. Moulin Huet.
- Hypera pollux* F. Grande Mare.
- Orchestes alni* L. On elms, by the Vale pond.
- Poophagus nasturtii* Germ. Gouffre on watercress.
- Ceuthorrhynchus assimilis* Pk. Common on *Cruciferae*.

I am much indebted to Mr. Champion for some of the names.—J. R. LE B. TOMLIN, Lakefoot, Reading: November 1920.

Coleoptera from Wensleydale (Yoredale), Yorkshire.—To one whose collecting had previously been confined almost entirely to the South (Sussex), a short holiday at Aysgarth was very productive of useful insects. Fortunately the weather favoured us, and though I was the only entomological member of the party, we all spent nearly the whole of every day out on the moors. On August 28th I arrived at Leyburn late in the afternoon, armed with a sleeping-bag, etc., walked to Agglethorpe and there "camped" for the night beside a small pond. Searching the banks of the pond produced nothing beyond *Nebria brevicollis* and *Agonum albipes* by the score. The next day I walked by a circuitous route to the river near Swinithwaite. Under a half-submerged stone I got a nice series of *Dianous caeruleus*, and in a dog washed high up into a tree by the winter's flood a remarkable specimen of *Necrophorus humator* was found; it is very small and narrow, and on the left elytron are two small dark red spots, corresponding in position to the bands on *N. vespillo*, etc. I next walked to Aysgarth to meet the rest of the party. During our two weeks spent there the following were found:—

Nebria gyllenhali, Carperby, under stone near a "beck," and on the bank of R. Ure (Yore). *Calathus melanocephalus* was abundant everywhere, but on the top of Penhill it was replaced by *C. micropterus*. *Patrobis excavatus*, top of Addleborough Hill. *Pterostichus vitreus (adstrictus)*, top of Penhill; *P. aethiops*, Aysgarth. *Bembidion tibiale*, Carperby, by beck; *B. atrocoeruleum*, on banks of R. Ure, with *B. littorale* and *femoratum*. *Hydroporus umbrosus, gyllenhali*, and *celatus* (?), peat ponds on Penhill. *Quedius auricomus* and *umbrius*, in moss by waterfall in Gill Beck, the former in plenty; *Q. boops*, Harland Hill. *Lathrobium fulvipenne*, common on Penhill. *Silpha atrata* ab. *brunnea*, Thoraby, under stone. *Triphyllus (Pseudotriphyllus) suturalis*, Swinithwaite, in *Polyporus*. *Sinodendron cylindricum*, several in ash log, Freeholder's Wood. *Aphodius lapponum*, Harland Hill, cow droppings; *A. putridus (foetidus)*, Addleborough Hill, in *stercore ovino*. *Serica brunnea*, one in dry flood-refuse, R. Ure. *Niptus crenatus*, Aysgarth, in house. *Longitarsus succineus*, Aysgarth. *Phyllodecta ritellinae*, near R. Ure. *Otiorrhynchus oratus* and *O. rugifrons*, under stones by R. Ure and Gill Beck respectively. *Metocercus paradoxus*, at Penhill a fine ♀ flew in front of me and alighted on a tree-trunk over a hedge; I, luckily, climbed over and caught it before it got out of reach.—GEORGE RYLE, 28 Southmoor Road, Oxford: November 30th, 1920.

A Note on Coleoptera in drift pine-logs.—Referring to my record in the "Ent. Mo. Mag." for June 1918, p. 137, of the capture of numbers of specimens of *Acanthocinus aedilis* from pine-logs washed up at Morteheo, N. Devon, I am now able to supplement the above note by recording various other species taken under the same conditions. These beetles have been identified by Mr. J. H. Keys of Plymouth, who also submitted them to Mr. E. A. Newbery, to both of whom my best thanks are due. *Thanasimus formicarius* L., *Stereocorynes truncorum* Germ., *Hylastes ater* Pk., *Pissodes pini* L., *Tomicus scindentatus* Börn, and the following, which are not on the British List:—*Hypophloeus fraxini* Kugel. ? or *H. pini* Panz., which lives in the borings of *T. scindentatus* and preys upon its larva; *Tomicus erosus* Woll.; *Hylurgus ligniperda* F.; *Platysoma oblongum* F. As a factor in the dispersal of insects the above is of interest.—CHAS. BARTLETT, Morwenstow, Portishead, Somerset: December 6th, 1920.

Leucania unipuncta Hw. (*extranea* Gn.) in N. Cornwall.—I have pleasure in recording the capture of a fine ♂ specimen of *Leucania unipuncta* at sugar on the very wet night of September 17th last, on the coast in the Padstow district. During the week I also took 1 ♂ and 3 ♀ specimens of *Polia nigrocincta*.—CHAS. BARTLETT: December 6th, 1920.

Micro-Lepidoptera in the Oxford district.—The following is the continuation of an article on the same subject published in this Magazine in October 1914. It is based for the most part on observations made in the years 1915, 1919, and 1920; but a few isolated notes made during "leaves" in the period 1915-19 are also included. The *Tineina* are omitted; interesting records of such "small fry" from this district are so numerous that they must appear (if at all) in a separate article.

OXFORD.—Within the borough boundary I have noted *Ephestia kuehniella* Z., abundant in flour-mills; *Hypospygia costalis* F., frequent on fences and street-lamps; *Phtheochroa rugosana* Hb., one on a fence, July 1920; *Olethreutes ericetana* Westw., one worn specimen, July 1920, flying among *Ballota nigra*; *Steganopterycha ratzeburgiana* Ritzb., one on a fence, July 1920; *S. nanana* Tr., on fences; *Epiblema foveella* L., rather common among *Artemisia vulgaris*. My own house and garden have produced *Aglossa pinguiculis* L., *Olethreutes striana* Schiff., *Bactra furfurana* Hw. (one specimen came in to light, June 1920), and *Grapholitha noeberiana* Schiff. *Scoparia angustea* Steph. is particularly common, on walls, on fences, and at light, and may be found in good condition in every month of the year.

BERKSHIRE (North).—The following records are from that part of Berkshire which lies north of Faringdon and Abingdon:—*Crambus pinellus* L., frequent in Tubney Wood; *C. uliginosellus* Z., Boar's Hill; *Homocidoma nebulella* Hb., single specimens from Cherbury Camp and Tubney Wood, July 1920; *Dioryctria abietella* F., one at Tubney, Aug. 1920; *Rhodophaea adenella* Zk., widely distributed in woods and hedges; *Scoparia cembrae* Hw., rather common at North Hinksey; *S. truncicollis* Stt., common in Bagley Wood; *S. crataegella* Hb., Bagley Wood and near Wytham; *S. pallida* Stph., in Cothill Bog; *Phlyctaenodes verticalis* L., in a meadow near Radley; *Platyptilia acanthodactyla* Hb., near South Hinksey; *Acalla cristana* F., locally common in Bagley Wood; *A. hastiana* L., Boar's Hill, scarce; *A. togiana* Schiff., one in Bagley Wood, Sept. 1919; *A. literana* L., widely distributed and frequent in woods; *A. shepherdana* Stph., fairly common among *Spiraea ulmaria* in one locality near South Hinksey (it is not to be found, in my experience, earlier than the second half of August); **A. perplexana* Barr., a good specimen taken in Bagley Wood, Aug. 31, 1919; *Dichelia grotiana* F., one in Bagley Wood, July 1915; *Cacoecia crataegana* Hb., frequent in Bagley Wood; **Tortrix bifasciana* Hb. (= *audouiniana* Dup.), one in Bagley Wood, July 19, 1920; *T. paleana* Hb., one at Cherbury Camp, July 1920; *Cnephasia sinuana* Stph., a few in Bagley Wood; *Conchylis dubitana* Hb., Tubney Wood, and plentiful near Sunningwell in Aug. 1915; *C. notulana* Z., near Cherbury Camp; *C. implicitana* Wek., one near Sunningwell, Aug. 1915; *C. smeathmanniana* F., near Sunningwell, Aug. 1915; *Hysterosia inopiana* Hw., South Hinksey; *Olethreutes salicella* L., Bagley Wood and Boar's Hill; *O. corticana* Hb., Cothill; *O. betulaetana* Hw., widely distributed in woods; *O. capreana* Hb.,

Bagley Wood and Boar's Hill; *O. nigricostana* Hw., Cothill; *O. fuliginea* Hb., single specimens in additional localities at Boar's Hill and Dry Sandford; *Steganoptycha nigromaculana* Hw., Tubney Wood and Boar's Hill, frequent among *Senecio jacobaea*; *S. oppressana* Tr., Bagley Wood, on poplar trunks; *S. diniana* Gn. (= *occultana* Wilk.), Bagley Wood; *S. obtusana* Hw., widely distributed in woods; *S. minutana* Hb., one on aspen near Cherbury Camp; **Asthenia pygmaea* Hb., abundant on young spruces in Bagley Wood; *Epiblema fulviana* Sph., the small form mentioned by Barrett occurs with normal specimens at North Hinksey; *E. ophthalmica* Hb., Cothill and Bagley Wood, among aspen (appears in late September and October, not earlier); *E. sordidana* Hb., Bagley Wood; *E. similana* Hb., Bagley Wood; *Grapholitha gallicana* G. (= *rufillana* Stt.), rather common among wild parsnip in one locality near South Hinksey; *Pamene fimbriana* Hw., locally common among stubby oaks in Bagley Wood; *Ancyliis comptana* Froel., Wytham Woods; *Lipoptycha saturnana* Gn., plentiful on tansy at Boar's Hill. *Olethreutes cespitana* Hb., recorded in my previous article, appears to be a permanent inhabitant of Wytham Woods, where it is confined to the Coralline Oolite at the summit. In my previous article I also recorded *Alispa angustella* Hb. from Wytham Woods, on the strength of an imago disturbed from some bushes on June 10th, 1911. As the perfect insect is rarely found, I expected to find the larvae common, but have hitherto been disappointed. In Sept. 1919 I found a single larva on *Euonymus* berries in a hedge near Dry Sandford, and have since found traces of others.

BERKSHIRE (the chalk Downs).—The Streatley district of Berkshire has produced, among other things:—*Crambus pinellus* L., Streatley Downs; **C. chrysomuchellus* Sc., common in one locality on the Moulsoford Downs, June 1920, exceptionally fine specimens; *Psammotis hyalinalis* Hb., near Pangbourne; *Phlyctaenodes verticalis* L., near Blewbury; *Pyrausta nigrata* Sc., rather common; *Oxyptilus parvidactylus* Hw., Aston Upthorpe Downs; *Alucita baliodactyla* Z., plentiful near Streatley; *Acalla logiana* Schiff., one near Streatley, September 1920; *A. schalleriana* F. and *A. comparana* Hb., Streatley; *Cnephasia longana* Hw., Moulsoford Downs; *Conchylis zephyrana* Tr., near Blewbury; **C. rutilana* Hb., two specimens disturbed from junipers on Moulsoford Downs, Aug. 7th, 1919; *C. subbaumanniana* Wilk., Unhill Bottom; *Olethreutes sellana* Gn., Streatley; *O. purpurana* Hw., Streatley; *Steganoptycha nigromaculana* Hw., frequent at Streatley; *Asthenia pygmaea* Hb., on spruces in Unhill Bottom, April 1920; *Pamene flexana* Z., Streatley; *Ancyliis mitterbacheriana* Schiff., Streatley.

OXFORDSHIRE (West).—The attractive district of Wyckwood has hitherto proved disappointing, so far as *Micro-Lepidoptera* are concerned. The only records worth mention are:—*Acalla cristana* F., a few in Sept. 1919; *A. literana* L.; *A. sponsana* F., including the form with whitish ground-colour; *Ancyliis comptana* Froel., common.

OXFORDSHIRE (Central).—That part of the county which lies east of Oxford has produced:—*Crambus uliginosellus* Z., Cowley Bog; *Phycita spissicella* F., Waterperry Wood; *Acrobasis consociella* Hb., Holton and Waterperry Woods; *Rhodophaea adenella* Zk., in a garden hedge at Marston, Aug. 1920; *Scoparia truncicolella* Stt., abundant in Waterperry Wood; *Acalla cristana* F.,

two in Holton Wood, Sept. 1919; *Pandemis corylana* F., Waterperry Wood; *Lozopera dilucidana* Stph., Holton Pits; *Olethreutes betulaetana* Hw., Waterperry Wood; *O. profundana* F., Waterperry Wood. From near Yarnton:—*Olethreutes semifusciata* Hw., *O. nigricostana* Hw.

OXFORDSHIRE (South).—The following are the more interesting records from the Oxfordshire Chilterns:—*Scoparia crataegella* Hb., Bix; *Tortrix bifasciata* Hb. (= *audouiniana* Dnp.), one near Highmore, June 27th, 1915; *Lozopera francillana* F., Watlington; *Olethreutes sellana* Hb., Watlington; *O. fuliginea* Hb., woods near Watlington, one on July 27th, 1913; *Steganoptycha nigromaculana* Hw., Hardwick; *S. obtusana* Hw., Highmore; *Asthenia pygmaeana* Hb., Coldharbour Woods, near Goring, April 1919; *Notocelia tetragonana* Stph., Highmore (locally common, but difficult to catch owing to its high and swift flight); *Grapholitha woerberiana* Schiff., Highmore; *G. ianthinana* Dup., Highmore.

BUCKINGHAMSHIRE.—While collecting on the outskirts of Shabbington Wood at various dates in 1920, I noticed the following:—**Phycita spissicella* F.; **Acrobasis consociella* Hb.; **Rhodophara suavelia* Zk. (bred from blackthorn); **Acalla cristana* F., rather common; **Pandemis heparana* Schiff.; **Cnephasia nubilana* Hb. (bred from blackthorn); **Olethreutes betulaetana* Hw.; *O. profundana* F.; **Panene spiniana* Dup., on Sept. 28th, 1920 (an unusually late date); **P. rhediella* Cl.; *P. splendidulana* Gu.; **Grapholitha perlepidana* Hw. I noticed the two last-named also in woods near Prince's Risborough in April 1920.

Acalla cristana F. has been mentioned several times in the foregoing list. This attractive insect is sometimes fairly common in restricted localities, though absent from many others which appear equally suitable. As usual, it is extremely variable; 70 specimens collected in the autumns of 1919 and 1920 included 20 distinct forms. It occurs in this district invariably on blackthorn, never (in my experience) on hawthorn.

Additions to the Berkshire and Buckinghamshire county lists of *Lepidoptera* (as published in the Victoria History of these counties) have been indicated by an asterisk (*). No county list for Oxfordshire has yet appeared.

The nomenclature adopted is that of Staudinger and Rebel's Catalog, 3rd edition (1901).—E. G. R. WATERS, 40 Leckford Road, Oxford: December 6th, 1920.

Nabis boops Schioedte in Wiltshire, etc.—While at the O.T.C. camp at Tidworth Pennings, Wilts, I had the good fortune to obtain an example, ♀, of this species of *Nabis*. It was taken from a tuft of grass on July 29th, 1920. Apart from the rarity of the insect, the specimen is interesting as being completely developed. Mr. E. A. Butler tells me that he knows of no other occurrence of the completely winged form in Britain, but that the late J. Sahlberg, in his recently published work, records finding one. The only other Hemiptera of interest taken in the same locality is an example of *Allodapus rufescens* H.-S., crawling in grass. Among other insects captured in 1920 are several specimens of *Orthotylus virens* Fall. These were found at Newton Reigny Moss, Cum-

berland, and Woodside Moss, Cliburn, Westmorland; both localities are some miles south of those in which Mr. F. H. Day and others have taken the species. My friend Mr. E. J. Pearce has also given me, among other Hemiptera, several specimens of *Notonecta halophila* J. Edw., taken by him at Minsmere, near Dunwich, on the Suffolk coast. They were found in brackish pools.—G. E. HUTCHINSON, Aysthorpe, Newton Road, Cambridge; December 8th, 1920.

The egg-laying of Sawflies.—Referring to the interesting "Notes on Egg-laying of *Pteronidea pavida* Lep.," by Dr. Chapman, I may say that I have bred sawflies for many years and have found that all require food if they are to be kept alive for more than a few days. Most of the smaller species, such as *Pteronidea*, *Pachynematus*, *Emphytus*, etc., are quite content if supplied with a few heads of dandelion or buttercup flowers; hemlock or hogweed are also favourites with flies which emerge later in the year. *Allantus arcuatus*, *Tenthredo livida*, and some others kill and eat small insects and cannot be trusted with sawflies smaller than themselves. *Pamphilus hortorum* is particularly fond of the pollen of pine-blossom, and it is well known that swallows in blossom attract many species of sawflies as well as other insects. *Abia fasciata* has an affection for the flowers of the snowberry, and *A. sericea* for those of the scabious, which are also the food-plants of their larvae. *Macrophya punctum-album* is the only species known to me which eats leaves of ash, biting holes in them after the manner of certain leaf-eating beetles. I noticed that the leaves which were attacked became much discoloured where the fly had gnawed them. Ash is one of the food-plants of the larva; I do not know if flies which have been reared on privet would eat those leaves, it would be interesting to find out. *Arge* seems to have a penchant for bramble and wild rose flowers. If fed in this way and given water daily (for they are very thirsty creatures) sawflies will live for a fortnight or even longer, which is useful when one is trying to find out on what plant they will lay their eggs. The longest time I have known one to live is five weeks, the species was *M. punctum-album*; she laid her eggs two or three days after emerging, and spent the rest of her life sunning herself and eating and drinking. I have taken several species of *Pamphilus* at strawberry-blossom, and *Allantus vespa* on those of *Cotoneaster*.—(Miss) E. F. CHAWNER, Forest Bank, Lyndhurst, Hants: December 1st, 1920.

Archisotoma besselsi (Pack.) Linnan, on the South Coast of England.—On April 21st, 1919, I was able to collect a number of these Collembolans near Beachy Head. They occurred, a few together, on the surface of the water in small rock-pools and amongst the shingle, near the foot of the Head. When the tide rises they apparently seek safety down amongst the shingle itself. Their presence on the South Coast is of particular interest, as the species is one of the Northern and Arctic forms of Collembola. It was first described by A. S. Packard (Amer. Nat. 1877) as *Isotoma besselsi*, and later redescribed by Sir J. Lubbock (Journ. Linn. Soc., Zool. xxvi, 1898) under the name *Isotoma spitzbergenensis*. It has previously been recorded in Britain by G. H. Carpenter and W. Evans (Proc. Roy. Soc. Edinb. xiv, 1899) from the Scottish Coast, and by

R. S. Bagnall (Trans. Nat. Hist. Soc. Northumb. etc. n. s. iii, 1910) from the Northumberland and the Yorkshire Coasts. This last is, I believe, the most southern locality recorded for this insect previous to the present note. The further distribution of the species includes N. America, Greenland, Spitsbergen, Lapland, and Finland.—JAMES M. BROWN, 176 Carter Knowle Road, Sheffield: December 9th, 1920.

Reviews.

"TRANSACTIONS OF THE CARDIFF NATURALISTS' SOCIETY," Vol. li. 1918. (Published 1920.)

A third of this volume of 90 pages is devoted to Entomology, in the form of a List of the Diptera of Glamorgan by Col. J. W. Yerbury. Of the 630 species enumerated, more than 90 per cent. were captured by the author, who has also increased the value of the List by including various interesting field-notes on his captures. Heavy additions could undoubtedly soon be made to this List, but a number of species are included which would have long eluded the net of a less experienced collector than Col. Yerbury. One notices various minor misprints, and on page 54 a more serious omission of the heading "*Empididae*" between lines 15 and 16 from below.—J. E. C.

"A NATURALIST IN HIMALAYA." By R. W. G. HINGSTON. Pp. xii + 300, with a map and several Plates. London: H. F. & G. Witherby, 1920.

This work teems with observations on insect-life as observed by the author during a long residence in Southern Hazara, a district in the Western Himalaya bordering the Indus. About half the book is devoted to entomological subjects, to which the present notice is necessarily limited. The harvesting-ants (*Messor barbarus* and *himalayanus*) are first dealt with, their general habits, the effect on them of heat, cold, shade, rain, etc., their sense of smell, mode of defence, and migration, being noticed in great detail. We then have an account of the carnivorous ants (*Myrmecocystus setipes*), and the "communicating" and other ants (*Pheidole indica*, *Crematogaster*, *Acantholepis*, and *Camponotus*); four chapters in all on ants. In Chapter X the insect studies are resumed, and the habits of various Asilids, *Notonecta*, *Vespa orientalis* and *magnifica*, *Polistes hebraeus*, *Apis dorsata* and *indica*, *Bombus tunicatus* and *haemorrhoidalis*, *Megachile cephalotes*, *Eumenes dimidiatipennis*, and *Psammophila tydei*, recorded. Next, Chapter XI, we have a few observations on Lepidoptera—*Papilio polyctor*, *Nytha parisatis*, *Libythea myrrha* (one of the few butterflies observed by the author to be attacked by insectivorous birds, and said to tumble to the ground and sham death when alarmed), *Melanitis*, *Gnophos*, *Boarmia*, *Abraxas sylvata*, *Anonychia rostrifera*, etc. The structure of the musical organ of a *Cicada* (*Platylonia brevis*, ♂) is described at length and illustrated on pp. 209-217; the author, after making numerous experiments, states that the mechanism is the most wonderful and perfect of its kind that he has ever been privileged to see. In Chapter XII is given an account of the habits and luminosity of glow-worms (*Lampyrus*), and of their contests with snails: fourteen hours are stated

to have elapsed in one case before the beetle, presumably a larva of a *Lamprophorus*, ceased to feed on the then decomposed and putrid flesh of the snail! The swarming of white ants (Termites), and their destruction by birds, sixteen species of which were seen joining the common feast at one nest, and remarks on the ingenious construction of the pits of ant-lions (*Myrmelconidae*), bring the insect observations to a close. The remainder of the book, apart from a long account of the instinct, etc., of spiders, is reduced to notes on Mammals, Birds, and Mollusca. The first chapter, however, gives a vivid description of the vegetation, etc., of a valley in Southern Hazara at all times of the year, and the last is devoted to a Geological Sketch. The Coleopterist will perhaps be disappointed to find that the only beetle referred to in the work is a *Lamprophorus*. The extremely careful and patient observations of the author in this western region of the Himalaya will well repay reading, though we may not agree with his conclusions in every case.

"ENCYCLOPÉDIE SCIENTIFIQUE, PUBLIÉE SOUS LA DIRECTION DU DR. TOULOUSE. LES INSECTES: ANATOMIE ET PHYSIOLOGIE GÉNÉRALES." Second Edition; Par C. Houlbert. Pp. xii + 374, with 207 text-figures. Paris: Libraire Octave Doin, 1920. Price 8 (broché) or 10 (cartonné toile) francs.

This useful little work, one of a series dealing with zoological subjects, is an introduction to the study of Economic Biology, the present edition having been revised and corrected. The commencing pages are devoted to a History of Entomology, and the sections of the rest of the work are headed Morphologie externe, Fonctions de nutrition, relations, et reproduction, Embryogénie, Biologie générale des larves, Entomologie économique, and Entomologie appliquée. In the Introduction are given portraits of seven well-known entomologists: Latreille, Rambur, Perris, Lacordaire, Boisduval, Guenée, and Fabre, reproduced from the "Etudes d'Entomologie" by permission of M. Charles Oberthür. There are few, if any, English works of this kind, though several by American writers are well known to us.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: September 9th, 1920.—Mr. STANLEY EDWARDS, F.L.S., Vice-President, in the Chair.

Mr. J. Farmer, of Brixton, was elected a Member.

Mr. Bowman exhibited a series of the spring-emerged half of a brood of *Ephya porata* from ova, and remarked on their close resemblance to the allied *E. punctaria*. Mr. Main. larvae of three parasites (Hymen.) which attacked the Longicorn (Col.) *Rhagium inquisitor* in Epping Forest. Mr. Turner, many species of *Heterocera* taken by Mr. Grosvenor in India, chiefly at Bangalore, including *Attacus edwardsi*, *Trabala vishnu*, *Crishna macrops*, *Zygaena cashmirensis*, etc. Mr. H. Moore, *Mutilla europaea* (Hymen.) from Bournemouth, with other *Mutilla* species from Egypt, Upper Amazons, Indiana, and the

Ionian Isles. Mr. Carr, pupae of the cheese-fly, *Piophilæ casei* (Dipt.). Mr. Bunnett, the black aberration of *Coccinella hieroglyphica* (Col.) from Keston with the type.

September 23rd, 1920.—Mr. K. G. BLAIR, B.Sc., F.E.S., President, in the Chair.

An Exhibition of Lantern Slides. Mr. Tonge, the resting habit of several British Geometers. Mr. Main, seasonal forms of *Pieris napi*, stages and pupal chamber of *Timarcha laevigata* (Col.), ravages and metamorphoses of *Donacia* sp. (Col.). Mr. Bedford (Eastbourne), rare species (Lep.) captured in Sussex, local birds, rare and local orchids, abnormal growths, etc. Mr. Withycombe, *Chrysopa*, *Heimerobius*, *Syrphus*, and *Stratiomys*. Mr. Colthrup, positions of rest of butterflies and moths, and habits of birds. Mr. Grosvenor, many species and forms of the genus *Terius* from India. Mr. Bowman, a bred series of *Tricopteryx carpinata* from Oxshott, with numerous forms having well-emphasised transverse lines on the fore-wings. Mr. H. J. Turner, three species of *Eaëtes* (Lep. Het.), *E. imperialis*, New York, *E. grandis*, São Paulo, and *E. sp.*? from Cordoba, Argentine, sent by Mr. Lindeman, with coloured photographs of the larvae of the two last.

October 14th, 1920.—The President in the Chair.

Mr. J. B. Farmer presented a box of British Odonata to the Society's collection. Mr. Riley, on behalf of Mr. South, for Mr. Dalton, aberrations of (1) *Agriades coridon*, between ab. *albicans* and var. *apennina*; (2) *Hibernia leucophaea*, conspicuous wavy lines on a clear ground; (3) dark grey-brown *Bombus pinaria*. Mr. Turner, a small race of *Zygæna filipendulae* from Box Hill, with 6th spot very feebly developed, including ab. *cytisi* and other aberrations. Mr. Newmin, living full-fed larva of *Hyloicus pinastri* from Suffolk. Mr. B. S. Williams, three *Pieris rapae* showing a discal spot on the hind-wings, and a striate asymmetrical form of *Rumicra phlaeas*. Mr. Johnson, banded females of *Pieris napi* from Ireland, one being yellow-suffused; confluent *Zygæna trifolii* from Folkestone, and a gynandromorph of *P. rapae*. Mr. Grosvenor, *Pieris canidia* (various forms), *P. krueperi*, and *P. rapae* from India. Mr. Mera, *Polia chi* closely approaching form *olivacea*. Mr. Blenkarn, *Carabus nitens* and other *Coleoptera* from Poole. Seasonal notes from several members.—H. J. TURNER (*Hon. Editor of Proceedings*).

RESTING POSITIONS OF SOME NEMATOCEROUS DIPTERA.

BY F. W. EDWARDS, B.A., F.E.S.

All students of Diptera and of Medical Entomology are familiar with the fact that many flies, such as the malarial and non-malarial mosquitoes, the tse-tse flies, and some others, may be recognised in life at a glance by the positions in which they hold their wings and legs when in a state of rest. Systematists have made some use of these points, Meigen in many of his generic diagnoses laying great stress on

the position in which the wings are held, whether in the shape of a roof, or lying flat over the back. The subject has not, however, received the amount of attention from entomologists which it deserves. The following notes, regarding certain families of Nematocera, are not by any means exhaustive, but will serve to draw attention to the interest of the subject. It will be seen that genera, groups of genera, subfamilies or families can frequently be recognised by their resting positions, but, as might be expected, there are some exceptions to most of the rules, and even the same species may not always settle in the same position. Copulatory attitudes are not noticed here, though some very interesting notes could be collected regarding them.

CECIDOMYIIDAE, SCATOPSIDAE, AND SCLARIDAE.

In these families, so far as observed, the legs are always held touching the surface, the body horizontal, the wings completely overlapping and lying flat over the back. This may be regarded as the normal position for the Nematocera.

MYCETOPHILIDAE.

There is great diversity in this family in respect of the resting positions, but some groups adopt very characteristic attitudes.

Ceroplatus and *Platyura* rest with the wings overlapping, flat over the back; the hind legs, and frequently the middle ones also, raised slightly from the surface, so that the insect is often hanging by its front claws only.

Macrocera holds its wings flat, but divergent at an angle of about 45° on each side of the body; all the legs touch the surface. *Diadocidia* behaves in a similar way.

Bolitophila, so far as I have noticed, keeps all its feet touching the surface, and its wings overlapping. Curtis, however, states that *B. saundersi* was found resting with its hind legs raised.

Mycomyia holds its wings much like *Macrocera*, but not quite flat; all the legs touch the surface. *Boletina* (sometimes) and *Acnemia* adopt a similar position.

Sciophila (*Lasiosoma*) and *Monoclona* resemble *Mycomyia*, but the wings are much less divaricate and sometimes partially overlap.

Exechia, *Rhymosia*, *Allodia*, *Brachypeza*, and *Cordyla* all raise their middle legs high above the body, the tarsi being curved towards each other so that they almost meet. The wings completely overlap,

but are raised up at an angle with the abdomen (this last feature more pronounced in *Cordyla* and *Brachypeza* than in the others).

Septonia sometimes, if not habitually, turns its wings downward at the sides of or more or less beneath the abdomen. It will be of interest to know whether a similar habit exists in the probably allied genera *Epicrypta* and *Delopsis*.

Most of the remaining genera (e. g., *Leptomorphus*, *Apolephthisa*, *Tetragoneura*, *Leiomyia*, *Trichonta*, *Phronia*, *Mycetophila*, *Zygomyia*) exhibit no striking peculiarity, the wings being held flat and overlapping over the back, and all the legs touching the surface.

DITOMYIIDAE.

Both *Ditomyia* and *Symmerus* rest like *Ceroplatus*, with the hind legs slightly raised, the wings flat and overlapping over the back. In view of Keilin's account of the early stages, the assumption which might have been made that this was an indication of relationship, cannot be maintained.

ANISOPODIDAE (RHYPHIDAE).

There is a curious difference in the resting attitudes adopted by *Rhyphus punctatus* and *R. fenestralis*. Both hold their legs and wings in the normal position, with the abdomen somewhat curved downwards, but the former has the front part of the body raised, the tips of the wings almost or quite touching the surface, while the latter has the head a little nearer the surface than the tail. *Mycetobia* when alive resembles in shape and attitude a small *R. fenestralis*.

CULICIDAE.

The habit of raising and waving the hind legs is well known, as is the difference in posture between Culicines and Anophelines, but the fact is often overlooked that during hibernation both *Culex* and *Anopheles* rest with their legs and bodies close up against the surface, all the legs widely extended. Knab has recorded that the members of the tropical tribe, Sabethini, raise their hind legs to a greater extent than do other mosquitoes, even curving them forward over the head.

Chaoborus resembles *Anopheles* in the position of the body; *Mochlonyx* has a more *Culex*-like attitude, but in neither genus are the hind legs raised.

CHIRONOMIDAE.

Chironominae.—All the members of this subfamily (except sometimes *Metriocnemus*) keep their front legs raised, but the position of the

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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Third Series. No. 74.] FEBRUARY, 1921. [PRICE 2/- NET.
[No. 681.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

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VOLUME LVII.

[THIRD SERIES—VOL. VIII.]

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.— February 2nd. March 2nd. 16th.

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The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

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Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

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Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

wings varies a good deal, though they never overlap. In *Metriocnemus* and the *Orthocladius* group the wings are held in a roof-like position, the steepness of the angle varying partly with the breadth of the wing, those species with the broadest wings showing the steepest roof; the wings of the females being usually broader than those of the males, the roof-like position is more noticeable in this sex. In this group the wings are usually in contact by their upper (posterior) edges. In *Cricotopus* and the related *Trichocladius*, however, the wings are slightly divaricated and the angle of the roof is comparatively slight; in these species we thus see an approach to the next group.

The Chironomini (*Chironomus*, *Tanytarsus*, and some small allied genera) hold their wings flat or almost flat; in *Chironomus* they are usually practically touching by their inner (posterior) edges, while in *Tanytarsus* they are more divaricate, lying quite free at an angle of about 30° on each side of the body. In the genus *Chironomus*, however, I have come across two species which are exceptions to the general rule in holding their wings in a roof-like position. These species are *C. flavimanus* Mg., as determined by Verrall (a species somewhat resembling the common *Paratendipes albimanus* Mg.) and *C. incertus* Wlk., a small green species.

Tanyptinae.—These insects do not raise their front legs. In the *Diamesa*-group, as in *Trichotanyptus* and the dark species of *Tanyptus*, (subgenus *Macropelopia*, e. g. *M. nebulosus* Mg.) the wings are held in a roof-like position, while in the lighter-coloured *Tanyptus* (s. str.) they are held flat and diverging at an angle of 45° on each side of the body.

Ceratopogoninae.—There is great uniformity throughout this subfamily, almost all the species settling in the normal manner with the wings overlapping flat over the back, and all the legs in contact with the surface. I have, however, recently found one notable exception. *Stilobezzia flavirostris* Winn. (though not the other British species of this genus) keeps its wings divaricate at an angle of 45° on each side. Malloch mentions two American species (*S. picta* and *S. antennalis*) which have this habit; the latter of these seems to be the American representative of *S. flavirostris*.

Orphnephila when alive looks like one of the *Ceratopogoninae*.

SIMULIIDAE.

The front legs are often raised and waved about. The wings overlap.

TIPULIDAE.

It has sometimes been stated that the *Tipulinae* can be distinguished from the *Limnobiinae* by having their wings divaricate in repose, but this is only a rough distinction, as very many *Tipulinae*, especially of the genus *Nephrotoma* (*Pachyrrhina*), also *Tipula rufina* and some others, close their wings when fully at rest. The *Ptychopterinae* and *Limnophila ochracea* (also, according to Alexander, the American *L. toxoneura* and *Epiphragma fuscipennis*) have them divaricate.

Some tropical *Limnobiinae* have been recorded as resting with their legs in curious positions. Thus *Conosia irrorata* has its front legs and middle femora directed straight forwards, its hind legs straight backwards, and its middle tibiae and tarsi at right angles to the body. *Styringomyia* "rests on walls with the two anterior pairs of legs stretched out straight in front and the posterior pair behind, resembling a stray piece of cobweb."

Dolichopeza and some species of *Tipula* (e. g. *T. oleracea*) often hang by their front claws only, with their other legs widely spread out.

Major E. E. Austen has observed a female of *Limnobia decemmaculata* resting with its head near the surface and its body raised, resembling an *Anopheles* in this respect.

Many species of *Dicranomyia* (Alexander says also *Geranomyia*) "practise a curious up-and-down bobbing while at rest or while feeding, their long, slender legs acting as springs." This is particularly noticeable in our commonest species, *D. chorea*.

November, 1920.

FOUR NEW AFRICAN SPECIES OF NEPTIS.

BY H. ELTRINGHAM, M.A., D.Sc.

Being engaged on a systematic investigation of the African species of the Nymphalid genus *Neptis*, I find four hitherto undescribed forms, of which I submit the following account:—

Neptis poultoni, sp. n.

Expanse 38–42 mm. Ground-colour dark sepia with white markings. Fore wing with an inner marginal patch in 1 *a* and 1 *b*, the proximal edge of which forms a straight line continuous with that of the hind-wing discal band. In 2 and 3 are large contiguous spots forming a subovate patch of regular outline. In area 4 a minute white dot placed distally. In 5, 6, and 10 contiguous

spots forming a large subapical patch. Distal to the white markings and roughly following their contour a line somewhat paler than the ground-colour, followed by a band of more or less rounded dark internervular marks, this followed again by three paler lines forming a hind-marginal border. Fringes dotted white between the nervules. Hind wing with a white discal band of regular outline, 4 mm. wide on inner margin and rather broader in 5, thence narrowing to a small spot in 7. Distal to the white band a border similar to that on fore wing.

Underside. Ground-colour paler than above. Costa white at base and as far as cell end. In cell a white line on subcostal curving outwards and downwards, its end pointing to origin of nervule 3. On end of cell a white transverse line, and beyond this, indications of a second indistinct line. Discal white spots as above, but subapical patch extends into 10. The border ornamentation of pale lines much accentuated, owing to increased whiteness of lines, and an additional fine marginal line.

Hind wing brown at base, but with a *conspicuous curved white costal bar from base to end of 8*. Two indistinct narrow whitish streaks on dark ground. Discal band as above, and beyond it a border of same pattern as in fore wing.

2 ♂♂, Chigwe, Mabira Forest, nr. Kampala. Taken by Dr. S. A. Neave, 24.vii.1911. Type in British Museum.

Neptis poultoni closely resembles *nemetes nemetes* Hew., and also, but less closely, *trigonophora* Butl. From *nemetes* it is at once distinguished by the curved white distal band in hind-wing underside, and from *trigonophora* by the underside pattern of the hind margins of both wings. The male annature is quite distinct.

Neptis barnsi, sp. n.

Expanse 55-60 mm. Ground-colour sepia-black with white markings. Five white dots in cell of fore wing, and traces of two minute dots beyond. An inner marginal white patch of two elongated spots in 1*a* and 1*b*, their proximal edges straight, outer ends slightly separated. In 2 and 3 two white marks, proximally just separated by nervule 3, but distally more widely divergent. In area 4 an obsolescent white streak (in some co-types well developed). In 5 and 6 elongated spots divided by nervule 6 and distally divergent. A small spot in 9 near costa. Distal to white markings and roughly following their contour a fine line of bluish-grey scales which is thrown into a series of arches between the nervules. Following this, three bluish-grey lines continuous except at the nervules. Fringes spotted white between the nervules.

Hind wing with a discal white band about 5 mm. wide, rather narrower at inner margin, slightly projecting proximally at median, and extending to area 6. Distal edge of band indented on nervules by the ground-colour and slightly powdered with black between. Three bluish-grey submarginal lines as on fore wing, and midway between the innermost of these and the discal band a narrow line somewhat paler than the ground-colour.

Underside. Ground-colour paler than above. Fore-wing costa white at base and nearly to cell end. In cell a series of rather complicated white

markings, consisting of a basal streak terminating in a spot, a transverse streak, two small spots, and two at each cell end. Beyond this, three or four very small spots. Large white marks as on upper side, that in 4 more fully developed, the pale lines all much more accentuated but white, not bluish-grey, and there is a trace of an additional fine line at and below the apex.

Hind wing with a large curved white costal band from base nearly to end of 8, followed by two less definite white bands on the brown ground-colour. Discal band as on upper side, and rest as on fore wing.

8 ♂♂. Type, Belgian Congo, between Ituri and Epulu Rivers (*Barns*), March 1920 (*Coll. Joicey*).

Co-types, Bitje, Ja River (1), Upper Kassai (5), Semliki Valley (1).

This species closely resembles *seeldrageri* Auriv., from which it may generally be distinguished by the obsolescent character of the streak in fore-wing area 4, and by the fact that the pale line on fore wing immediately distal to the discal markings is deeply arched (distally convex) between the nervules. The male armature is quite distinct from that of any other described species.

***Neptis rothschildi*, sp. n.**

Expanse 50–55 mm. Sepia-black with white markings. Fore wing with a white cell streak, beginning at base and passing between nervures 4 and 5 to a point considerably beyond the origin of 3. Elongated inner marginal spots in 1*a* and 1*b*, distinctly separated. Two similar discal spots in 2 and 3 still more separated. A white dot distally placed in area 4, and a series of three well-separated elongated spots or streaks in 5, 6, and 9. Distal to these discal spots and following their contour a very fine line of greyish-white scales. Beyond this a well-developed white line, broken into spots by the nervules. Finally two delicate submarginal lines.

Hind wing with a discal band about 3–4 mm. wide from inner margin to nervule 6, the spots of which are distinctly separated by the nervules. Distal to this a very faint line, rather paler than the ground-colour, followed by a narrow white secondary band of quadrate spots separated by the nervules. Two delicate submarginal lines.

Underside. Pattern of upper side repeated, but the white marks more pronounced on a paler ground. Fore wing white on costa at base. Cell streak larger and more sharply outlined. Above end of cell two or three additional white streaks. White submarginal bands much more distinct, especially inner one, which is widened to about 1.5 mm., and there is an extra distal line at apex.

Hind wing with a white costal band from base to middle of costa. The secondary discal band composed of spots much larger than above.

2 ♂♂. Type, Kingour Forest, Manyema, Congo Free State (no date) (*Mus. Tring*).

Co-type, Upper Kassai (no date) (*Coll. Joicey*).

This species most nearly resembles *paula* Staud, but is quite differently marked in fore-wing cell above and below. Ward's *biafra* is also similar, but has three transverse white stripes in cell. All three differ from other described species in having a secondary white discal band on the hind wing. The male clasper of the present species is quite different from that of *paula*. I have not had an opportunity of examining that of *biafra*.

Neptis rogersi, sp. n.

Expanse about 50 mm. Sepia-black with white markings. Fore wing cell with three or four white dots and three beyond it. An inner marginal white patch of two spots in 1*a* and 1*b*. Two large subquadrate spots in 2 and 3 separated proximally by the nervule, and distally by a slight invasion of the ground-colour. In 4 a small subtriangular spot, distally placed. Three subapical spots in 5, 6, and 9, the first two subquadrate, distally divergent, and the third a small streak. Just distal to the white discal marks a white line roughly following their contour. This line is not arched between the nervules. Following this, two fine submarginal lines with faint indications of a third, the first breaking into three small but rather conspicuous spots near the costa.

Hind wing with a white discal band 7-8 mm. wide, straight, and sharply defined proximally, regular but invaded by the black nervules distally. The outer edge of the band is closely followed by a pale line, and there are three more pale lines forming a marginal border. Fringes white between nervules.

Underside. Not markedly paler than above. All the lighter markings chalky white. Fore-wing with white at base of costa and a complicated pattern of lines and spots in cell. In the type form there is in the cell a line along the subcostal having two downward projections, between which is a small spot. Just beyond end of this line another spot, and on the median side three spots, one longitudinal and two transverse. Four or five small spots beyond cell. (In the co-type two of the spots coalesce to form a transverse line across cell end.) The spot in 4 is very little larger beneath than above, but more sharply defined and definitely triangular. The discal and submarginal lines are broader and more distinct, only separated by fine dark lines.

Hind wing with a curved white costal band, but this much narrower than in *barnsi* and *seeldrayersi*. This followed by two very distinct curved white bands. White discal band very broad and extending from inner margin to area 7. Other lines as on fore wing.

2 ♀ ♀. Rabai, 26.vi.1909 and 15.vii.1911 (*Rev. K. St. A. Rogers*). Type, Oxford.

I hesitate to describe a species from ♀ ♀ only, but the two examples from which the above account is compiled do not correspond with any other forms in the collections which I have examined. They are at once

distinguished from *agatha* and *sceldrayersi* by the small spot in fore-wing area 4, whilst they differ from *barnsi* in the straight formation of the fore-wing discal line bordering on the large white spots. Also in the much narrower hind-wing basal costal band and in the pure white markings of the underside.

I hope shortly to be able to publish figures of the above forms together with a revision of all the known African species.

Hope Dept., University Museum, Oxford :

December 1920.

A CAPSID NEW TO BRITAIN.

BY E. A. BUTLER, B.A., B.SC., F.E.S.

Amongst some *Hemiptera* which I recently received from Mr. B. S. Harwood for identification, there were five specimens of a Capsid which were taken at Goodwood, W. Sussex, in July 1919, by his brother, Mr. Philip Harwood, F.E.S. These proved to be *Dichrooscytus calesianus* Mey. & Fieb., and as this species is found on the Continent on juniper, they probably came from juniper-bushes which Mr. Harwood was beating at the time in search of *Cyphostethus tristriatus*.

In coloration *D. calesianus* is a good deal like our well-known *D. rufipennis*, but it is much smaller. The head, pronotum, and scutellum are yellowish green, the corium inwardly red and outwardly very pale yellowish green, the two colours blending into one another, but the red becoming deepest just before the cuneus, where it forms an indistinct fascia; the clavus is red at the base and extreme apex and greenish between; the cuneus greenish, more or less distinctly outlined with red, and there is often a fuscous dash just beyond its inner angle; the membrane is dark fuliginous and the legs and antennae greenish yellow, with the apices of the latter and of the tarsi fuscous. In length it does not exceed 4 mm., and is often rather less than that. As already stated, it occurs on juniper, and has been recorded from France, Spain, Switzerland, Greece, Algeria, and Tunisia.

I have to thank Mr. Harwood for the addition of one of these specimens to my collection.

14 Drylands Road,

Hornsey, N. 8. :

December 29th, 1920.

Stenus subdepressus Rey, a British insect.—A short time ago Col. St. Claire Deville sent me a specimen of *Stenus subglaber* Thoms., taken in the marshes of the Pas-de-Calais, south of Etaples, suggesting the probability of its occurrence in our fens, the insect being a close ally of *S. carbonarius* Gyll., from which it is separable by the simple penultimate joint of the tarsi. On examining my series of the latter, two species were found to be included under it; the second, however, represented by four examples from Chobham or Woking, was not *S. subglaber*, but *S. subdepressus* Rey (identified by Col. Deville), an insect new to our list. These specimens have done duty at various times for *S. melanarius*, *S. atratulus*, and *S. carbonarius* in my collection—one of them was captured at Chobham in October 1878, the others during recent years, and I have also found it at Puerto de Pajares in Northern Spain. *S. subdepressus* (= *explorator* Fauv.) belongs to the section having the basal abdominal segments (2-5) bi- or quadri-carinate anteriorly, which includes *S. melanarius* and *S. atratulus*, from which it is mainly distinguished (following Rey, Ganglbauer, and Reitter) by the flattened, unimpressed elytra, thus resembling *S. carbonarius*. *S. carbonarius* and *S. subglaber* belong to the section having the basal abdominal segments uni- or tri-carinate, and *S. subglaber* is quite likely to be found here, as Col. Deville suggests. *S. subdepressus*, he tells me, occurs in sandy wooded districts (not especially in marshy places) in France, Belgium, Denmark, Germany (once in great plenty in a wood at Leipzig), Spain (Reinosa), etc.). Rey's diagnosis is as follows:—Elongate, subparallel, subdepressed, scarcely pubescent, black and rather shining, with the first joint of the palpi pitchy-red. Head distinctly wider than the prothorax, as broad * as the elytra, somewhat strongly and densely punctured, obsoletely bisulcate, with the intervening space slightly convex posteriorly. Prothorax oblong, narrower than the elytra, subarcuate at the sides anteriorly, subretracted behind, somewhat strongly and densely punctured, equal, subdepressed posteriorly, with a trace of an abbreviated median groove. Elytra about the length of the prothorax, even, somewhat strongly and deeply punctured. Abdomen rather finely and densely punctured, more finely and more densely punctured posteriorly, with the three basal segments distinctly 4-carinate at their base.—G. C. CHAMPION, Horsell: *January 8th, 1921.*

Bruchus rufipes Hbst. ab. *apicatus* Rey, a British Insect, with some notes on the type-form, and other aberrations.—On July 11th last I swept a small *Bruchus* beneath a blackthorn hedge on the cliff above St. George's Well, near Padstow, N. Cornwall. This insect has the antennal joints 1-5 and 11 yellowish red and the others black, and it proves to be *Bruchus rufipes* Hbst. ab. *apicatus* Rey, a rare form, which, so far as I am aware, has not been taken in Britain before. *Bruchus rufipes* Herbst (1783) is generally regarded as the correct name for the type-form, *B. nubilus* Boheman (1833) being treated as a synonym.

Gorham (1873) and Sharp (1883), however, use Boheman's name, and the European Catalogue (1906) gives *nubilus* as the type and *rufipes* Baudi (1886) as a synonym, not mentioning Herbst at all. Again, *B. luteicornis* Illiger (1794) is regarded as a distinct species by Gorham (1873), Sharp (1883),

* Incorrectly given "de la longueur des elytres" in the diagnosis only.

Fowler (1890), Rey (1893), Schilsky (1905), and the European Catalogue (1906); but as a synonym of *B. rufipes* Hbst. (♂) by Champion (1901), Beare and Donisthorpe (1904), Fowler and Donisthorpe (1913), and as a variety by Junck (1913).

As this appeared to me to be rather curious, I have looked up all the original descriptions.

Herbst (1783), in defining *rufipes*, writes: "die drei ersten Gelenke der Fühlerhörner sind rost furbig, eben diese Farbe haben auch die zwei ersten Paar Füße." We thus see that the type has only the first three joints of the antennae, and the front and middle pairs of legs, red; I have never seen a specimen like this, and should think it is very rare.

Illiger (1794) describes *luteicornis* with "Antennis luteis. Pedes quatuor antici lutei. Bini postici nigri." If, as seems probable, this should be regarded as a form of *rufipes* Hbst., we should call it *Bruchus rufipes* Hbst. ab. *luteicornis* Illig.

Marsham (1802) describes *seminarius*—"antennarum basi pedibusque anticis testaceis." This is given incorrectly by Junck as a synonym of ab. *luteicornis* Ill. As Marsham only says the base of the antennae is testaceous (but does not say how many joints) it must be regarded as a synonym of *rufipes* Hbst.

Boheman (1833) in his description of *nubilus* gives "Antennae articulis quinque baseos rufo-testaceis, sequentibus atris. Pedes quatuor anteriores rufo-testacei, femoribus anticis a basi versus medium, intermediis fere ad apicem nigris; postici nigri, tarsi fusco-ferrugineis."

Bruchus rufipes Hbst. ab. *nubilus* Boh. therefore has the first five joints of the antennae and the two front pairs of legs red, the anterior femora being half black, and the intermediate femora almost entirely so; the posterior legs are black with blackish red tarsi.

Motschulsky (1854) describes *Bruchus ervi* as "der graue Linsenkäfer," and says: "Er kommt in der gewöhnlichen kleinen Feldlinse (*Ervum lens*) vor." Junck gives this as a synonym of *rufipes* Hbst. I had considerable difficulty in finding the paper in question, as it was not to be found in any of the libraries of the scientific societies; but I eventually ran it to earth in the reading room of the British Museum. Motschulsky's description might well do for *Bruchus lentis* Boh.; he calls it the gray Lentil-Beetle; and *Ervum lens* (= *Lens esculenta*), the Lentil, which certainly does not grow in Britain. I believe this should be regarded as a synonym of *B. lentis*.

Baudi (1886) says "*rufipes* Herbst = *nubila* Böhm.," and gives a description which exactly agrees with the latter. He also mentions a number of varieties, but without giving any names to them. *B. rufipes* Baudi is therefore a synonym of *B. rufipes* Hbst. ab. *nubilus* Boh.

Rey (1893), under "*Bruchus rufipes* Hbst. (*nubilus* Boh.)," describes several aberrations: "*apicatus* R., a le dernier article des antennes roux; le *minor* R., est très petit; le *flavicornis* R., a les antennes entièrement testacées."

The last mentioned aberration is a synonym of *B. rufipes* ab. *luteicornis* Ill. (if *rufipes* and *luteicornis* are to be considered as forms of the same species) and is so treated by Junck.

Rey, however, considers *luteicornis* to be distinct, and writes: "Elle est en effet toujours moindre; les antennes et les pattes sont plus grêles, avec les dents des tibiae intermediaires ♂ plus rapprochées et situées sur un talon plus étroit, et plus prolongé."

Champion (1901) writes: "*B. luteicornis* Ill. (1794) is the male of *B. rufipes* Herbst (1783) (= *nubilus* Boh.), and Illiger's name must be sunk as a synonym. The colour of the antennae and of the anterior and intermediate legs in this insect is very variable, but the females always have at least the six outer antennal joints black, and the males usually have the antennae entirely rufo-testaceous. In both sexes the four anterior legs and the antennae are occasionally almost entirely black; the tendency, however, is always for the male to have these parts more lightly coloured than the female. The males may easily be identified by the slightly curved intermediate tibiae, which are sinuous on the inner edge and sharply bidentate at the inner apical angle. In the series of specimens captured by myself at different times at Claygate and Ashstead, Surrey, there are all the gradations in the colour of the legs and antennae. Dr. Power's examples of *B. rufipes* from 'Surbiton' were also no doubt from Claygate. The only other British localities from which I possess specimens are Guildford and Hastings."

Fowler gives as localities for *B. luteicornis*:—Claygate; Ashstead; Southend; Maldon; Guestling, near Hastings; Portsdown Hill, near Portsmouth; and Isle of Portland; and for *B. rufipes*—Surbiton and Gravesend. In the supplement we add Enfield, Potter's Bar, Cheshunt, Hanwell, Guildford, Budleigh Salterton, and Teignmouth. I took a single specimen under lichen on an old post at Budleigh Salterton on February 11th, 1896, and in plenty by beating blackthorn blossom and sweeping beneath it in April and May, 1901, at Hanwell.

In the latter locality the specimens varied considerably in the colour of the antennae and legs, but nothing would be gained by giving names to every slight variation. In several specimens, however, the whole of the antennae and all six legs are *entirely* black. This form I propose to call *Bruchus rufipes* Hbst. ab. *melanarthrus* n. ab.

I have been unable to find any mention of the actual food-plant of this beetle. Fowler writes "On *Leguminosae*"; but this does not help us much. I have a theory that it may feed up in the kernels of the sloe; but of course I may be entirely wrong. This year I visited Hanwell when sloes should have been plentiful, but did not find a single fruit on all the blackthorn hedges and bushes that occur there. I hope to investigate the matter next year.

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—H. DONISTHORPE, 19, Hazlewell Road, Putney Hill, S.W.: November 15th, 1920.

Notes on the Coleoptera of Glamorgan, I.—Since the publication of a List of Glamorgan Coleoptera by the Cardiff Naturalists' Society * some few years ago, a great deal of fresh material has been available. The existence of a basic local list seems to prove an invariable stimulus to more vigorous collecting. This has been markedly the case in Glamorgan, and the present series of notes will bring the information recently acquired to some extent up to date, though it will not include much that has been learnt as to the range of various species within the limits of the county. An asterisk (*) implies that the species or variety is new to the above-mentioned List.

Carabus arvensis Hbst. Rhosilli Down, found walking on the moor, May 1920.
Nebria complanata L. This has been taken at several points on the Gower coast, and no doubt occurs all round the peninsula. It seems to emerge in the latter half of July.

Elaphrus riparius L. Common from Candleston westwards, but there is still no record for the eastern side of the county; *E. cupreus* Duft. Common round Kentig Pool in summer (*Wakefield*); Clyne Woods (*Id.*); generally distributed in Gower; *E. uliginosus* F. Llanrhidian Marsh, April 1915 (*J. W. Allen*); Oxwich Bay, not uncommon at freshwater trickles in early summer.

**Dyschirius salinus* Sch. Oxwich Bay in April; Porthcawl, June 1916 (*Hallett*).

**Panagaeus crux-major* L. Llanrhidian Marsh, in moss, April 1915 (*J. W. Allen*).

Licinus depressus Pk. The required confirmation has now been forthcoming, and the species has occurred to Mr. Allen at Rhosilli, and to Mr. Wakefield and myself at Llangenydd (April to October).

**Chlaenius nigricornis* F. var. *melanocornis* Dej. Kentig Pool, Aug. 1916 (*David*).

Bradycellus distinctus Dej. Llanmadoc (*David*). The records attached to this name in the List must be transferred to **B. sharpi* Joy; Mr. Wakefield has also taken this latter at Oxwich Bay.

**Harpalus tenebrosus* Dej. Swansea (*Blatch, fide Fowler*).

**Pterostichus niger* Sch. Ely, under bark, Jan. 1917 (*David*).

- **Amara converiuscula* Marsh. Llanmadoc, Aug. 1917 (*David*); **A. bifrons* Gyll. Rhosilli, in July (*J. W. Allen*); Llanmadoc, in August (*David*); **A. continua* Th. Llangenydd Burrows, April 1915 (*J. W. Allen*).
- **Anchomenus oblongus* F. Cwrt-yr-ala, July 1913 (*Hallett*); **A. atratus* Duft. Penarth, Sully, and Lavernock, in winter (*Hallett*); **A. gracilis* Gyll. Llandaff, Jan. 1917 (*David*).
- **Bembidium quinquestriatum* Gyll. Penarth and Sully in autumn (*Hallett*); **B. assimile* Gyll. Oxwich Bay and Llanrhidian Marsh, common in marshy ground, April to August; **B. clarki* Dawson. Penarth and Sully in late autumn (*Hallett*); **B. doris* Pz. Oxwich Bay, May to July (*Wakefield & Tomlin*); **B. normannum* Dej. Oxwich Bay, common, April to August; **B. lampros* Hbst. var. *velox* Er. Crawley Wood, one (*Wakefield*); **B. affine* Steph. Rhosilli Bay, in April (*J. W. Allen*); *B. testaceum* Duft. A single example at Portneathvaughan in river shingle, 14.8.16; **B. bruxellense* Wesm. Candleston, 23.4.16 (*Hallett*); **B. adustum* Sch. Dawson in his "Geodeph. Brit.," p. 197, introduces this species under the name of *B. rupestre* to the Brit. List, on the strength of examples in the Stephensian collection said to have been taken at Swansea. See Blatch in "Midland Naturalist," ii, 212.
- Tachypus pallipes* Duft. Broughton Burrows, very common in June (*Wakefield*); Kentig Burrows, common June to August (*David*); Llanmadoc, May 1920.
- **Patrobus assimilis* Chaud. Not uncommon under stones by the R. Perddyn at Pontneathvaughan in summer.
- **Pogonus littoralis* Duft. Llanrhidian Marsh, in April (*J. W. Allen*); Oxwich Bay, in April and May, not uncommon mixed with *P. chalcus*.
- **Dromius quadrimaculatus* Pz. Locally abundant under bark for most of the year from Penarth to Sully (*Hallett*); Llandaff (*David*).
- **Halidius fluciatilis* Aubé. Kentig Pool, March 1914 (*Hallett*).
- **Hydrovatus clypealis* Sharp. One at Oxwich, 27.4.18 (*Wakefield*).
- Deronectes latus* Steph. Common in a stream on Rhosilli Down, May 1920.
- **Hydroporus davisi* Curt. Very common in summer in rock-pools by the R. Perddyn, Pontneathvaughan; **H. gyllenhali* Sch. Bog-pools on Rhosilli Down in May; **H. rufifrons* Duft. Porthcawl (*Hallett*); **H. nigrita* F. Crynant, common in March (*J. W. Allen*); Pontneathvaughan, common in summer in river shingle; **H. marginatus* Duft. Swansea (*Wakefield*).
- **Agabus affinis* Pk. One at Crynant in March (*J. W. Allen*).
- **Rhantus bistriatus* Berg. One on the hills above Crynant at 1000 ft. (*J. W. Allen*).
- **Gyrinus opacus* Sahlb. Penarth, Jan. 1914 (*Hallett*).
- **Philydrus fuscipennis* Th. Bog-pools on Rhosilli Down, May 1920.
- **Paracymus nigroaeneus* F. Crynant, one, 28.3.14, and bog-pools on Rhosilli Mountain, April 1915 (*J. W. Allen*).
- **Laccobius oblongus* Gorham. Crynant, in March (*Id.*); *L. minutus* L. Common in summer at Crwmlyn Bog, Oxwich, Kentig Pool, and Candleston.
- **L. regularis* Rey. Llangenydd (*J. W. Allen*); bog-pools on Rhosilli Down, May 1920.

- **Chaetarthria seminulum* Pk. Fairly common in the R. Perddyn at Pontneathvaughan, at Llangenydd and Llanmadoc, April to August.
- **Helophorus nulsanti* Rye. Sully, Feb 1914 (*Hallett*); **H. griseus* Hbst. Swansea (*Wakefield*); Ely (*David*); Penarth, Sully, and Old Cogan, Jan. to Oct. (*Hallett*).
- Henicoerus exculptus* Germ. Abundant in summer in the R. Perddyn at Pontneathvaughan.
- **Ochthebius margipallens* Lat. Several at Oxwich, 16.8.16.
- Hydraena nigrita* Germ. Sully, in Feb., Penarth, and Cwrt-yr-ala (*Hallett*); very common in stream above Oxwich Bay, April 1919, and at Pontneathvaughan in summer; *H. gracilis* Germ. Common with the last above Oxwich Bay and at Pontneathvaughan; **H. atricapilla* Wat. One at Pontneathvaughan in river shingle, 12.8.16.
- **Sphaeridium quadrimaculatum* Marsh. In dung: Kenfig, June 1914; Llanmadoc, in April (*David*); Swansea, 9.7.17 (*Wakefield*); Penarth (*Hallett*); Llangenydd.
- Cereyon haemorrhous* Gyll. Crwmllyn Bog, Oxwich Bay, and Llangenydd in damp ground, May to Aug. Either the habitat given by Dillwyn is wrong or his identification; **C. marinus* Th. Two at Oxwich, 16.8.16; **C. terminatus* Marsh. Cardiff district in haystack bottoms; **C. lugubris* Pk. Llanmadoc in wet moss (*J. W. Allen*); **C. minutus* F. Not uncommon in June on the borders of Kenfig Pool; Llanmadoc, Sept. 1915 (*J. W. Allen*).

—J. R. LE B. TOMLIN, Lakefoot, Reading: *January 1921.*

An introduced Scolytid in Staffordshire.—Mr. Champion asks me to record the fact that some years ago I received a couple of specimens of the Scolytid *Crypturgus pusillus* Gyll. from Hanley. They were taken in all stages in pit-props in that district by the late L. H. Jahn, who, it may be noted, published a list of North Staffordshire *Coleoptera* in the "Transactions of the N. Staffordshire Field Club," vols. xxxix and xli.—J. R. LE B. TOMLIN, Reading: *January 1921.*

Cryptocephalus biguttatus Scop. on *Erica tetralix*.—The late W. E. Sharp (Ent. Mo. Mag. 1917, liii, pp. 76-79), in his interesting paper on *Cryptocephalus bipunctatus* L. and *C. biguttatus* Scop., mentions that he and Prof. Beare swept up three specimens of the latter species (in the Wellington College district) in a locality "revealing only ling, heather, tormentilla, knapweed, perhaps some plants of a dwarf willow, and grass." On June 27th, 1919, I swept a specimen of *C. biguttatus* (about 7 P.M., summer time) on the spot so well described. My next visit was on July 11th, between 9.30 and 10 P.M., summer time. I then swept three more. The next day was either hopelessly wet or windy, I forget which. On the morning of the 13th, however, I revisited the locality, resolved to use my eyes and not my net. On moving about quietly, I very soon espied one at a distance of some six to ten feet on a plant of *Erica tetralix*. To make a long story short, during July of that year and on June 26th, 1920, some two dozen were thus secured on this and other suitable spots. They were always found on *E. tetralix* and on no other plant, not even on *E. cinerea*, which was

abundant. Whatever be the larval habits, I can thus confidently assert that the imago lives on this species of heather. Many dropped before I could get near to them, but in every case a little patience and the application of tobacco smoke enabled me to complete their capture. The habit of dropping no doubt accounts for their supposed rarity. The fact of three specimens being swept after dusk shows that they must have then been in a drowsy condition. I noticed at the time that *Chaetocnema confusa* Boh., which was present in numbers, did not pursue its daylight tactics of jumping out of the net, but ran about swiftly and apparently aimlessly.—G. W. NICHOLSON, Oxford and Cambridge Club, S.W.: January 10th, 1921.

Coleoptera taken in East Suffolk, August 1920.—The majority of the species taken around Dunwich were quite common, but I venture to append a short note on some of the more interesting insects captured, as I do not think much collecting has been done in that part of the county. HALIPLIDAE.—*Halipilus obliquus* F., common in a pond near Darsham; *H. striatus* Shp. (one); *H. ruficollis* De G., abundant (including a specimen of the Continental type-form); *H. heydeni* Wehnck. (one near Huntingfield); *H. immaculatus* Gerh. (one, Darsham); and *H. confinis* Steph. (two in Darsham pond). DYTISCIDAE.—*Laccophilus interruptus* Panz. and *L. obscurus* Panz., both common; *Noterus sparsus* Marsh.; *Hyphydrus oratus* L., common in the Darsham pond; *Coelambus inaequalis* F.; *Agabus sturmi* Gyll.; and *Acilius sulcatus* L., not uncommon. GYRINIDAE.—*Gyrinus elongatus* Aubé, *marinus* Gyll., and *opacus* Sahlb., in a stream near the coast. HYDROPHILIDAE.—*Philydrus testaceus* F.; *Ochthebius marinus* Pk.; and *O. pygmaeus* F., Darsham pond. CLAVICORNES.—*Agathidium laevigatum* Er.; *Anisotoma calcarata* Er.; *Neerophorus vestigator* Hersch., dead rabbit; *Laemophloeus ater* Ol., common under the bark of posts of beechwood along the top of the cliff; *Antherophagus nigricornis* F., by casual sweeping in a clover field; and *Cryptophagus lycoperdi* Hbst., common in *Lycoperdon*. PHYTOPHAGA.—*Cryptocephalus fulvus* Goeze, sparingly in one meadow; *Lochmaea crataegi* Forst., abundant on *Crataegus*. PYTHIDAE.—*Rhinosinus planirostris* F., in a beech-pole on the cliff. ANTHICIDAE.—*Notoxus monoceros* L. and *Anthicus floralis* L., common on the beach. My best thanks are due to Mr. F. Balfour Browne and to Dr. G. W. Nicholson for the determination of critical specimens.—E. J. PEARCE, The Lodge, Corpus Christi College, Cambridge: December 28th, 1920.

Coleoptera in Cumberland in 1920.—Field-work last season was carried on under most unfavourable conditions, especially during the summer months, when the rainfall was persistent and excessive. Still, on entering up the season's observations and captures in my county register, I find several noteworthy entries, and in all can record six species as new to Cumberland. These are *Acupalpus exiguus* Dej., from flood refuse by the River Caldew in February; *Anchomenus sexpunctatus* L., from the same place, and an earlier specimen from the R. Petteril, but not previously recorded; *Medon ripicola* Kr., also from the Caldew; *Paederus fuscipes* Curt., a series in tidal deposits at the mouth of the R. Irt; *Hippodamia variegata* Goeze, swept from a hedge-bank at Drigg in July; and *Aphodius nitidulus* F., in abundance on the sandhills at the same place. In addition, it may be worth recording the capture of a second

Cumberland specimen of *Agathidium nigripenne* Kug., two examples of *Phaedon concinnus* Steph. near Drigg, and one of *Ceuthorrhynchus viduatus* Gyll. in the same locality. The last-named was found by Canon Fowler in Eskdale as recorded by him in the Ent. Mo. Mag., 1912, p. 286. Among a swarm of *Cereyon littoralis* Gyll. I picked out a specimen of var. *hinolatus* Steph. which I have not seen on the Cumberland coast before.—F. H. DAY, 26 Currock Terrace, Carlisle: January 14th, 1921.

Note on Limnebius picinus Marsham.—I have not yet seen a British *Limnebius* answering the description of this species as given in our modern text-books, i.e. a very small form with the suture of the elytra margined or rebordered towards the apex. All the examples representing it in my own and the Power collections (from Askham Bog, etc.) belong to *L. aluta* Bedel, in which the elytral suture shows no trace of an impressed marginal line. The species possessing this character, *L. evanescens* Kies. (= *oblongus* Rey), and the so-called *L. picinus* Marsh. (= *atomus* Duft., *minutissimus* Germ., and *sericans* Gerh.), form the subgenus *Bolimnius* Rey (= *Crepilimnebius* Kuw.), and it is evident, therefore, that the rebordered suture is too obvious to be overlooked altogether. I have taken *L. evanescens* in abundance (with *Hydroscapha*) at Terranova, Sardinia, and the groove is plainly visible in these specimens. In the Stephensian collection, which should include Marsham's types, there are no *Limnebi* belonging to Rey's subgenus, and *L. picinus* is represented by what appears to be *L. nitidus* of the same author. The proper course, it seems to me, would be to drop Marsham's name (and also that of *L. mollis*) for our smallest British species, and to call it *L. aluta* Bedel, restoring the name *atomus* Duft. for the so-called Continental *L. picinus* Marsh. Dr. Sharp, at my request, has examined his specimens, and he cannot find any with an apically bordered elytral suture. I am indebted to M. Deville for French examples of *L. aluta* and *L. atomus*.—G. C. CHAMPION, Horsell: January 1921.

Notes on the Conifer-feeding species of Argyrethia in the Oxford district.—The distribution of the smaller species of this genus in England seems to be still imperfectly known, their apparent insignificance and similarity (especially in the case of the unicolorous species) causing them to be neglected. I therefore give a few notes on their occurrence in this district. *Argyrethia dilectella* Z. is common among juniper on the Oxfordshire Chilterns and on the Berkshire Downs. It is not, however, confined to juniper. In July 1920 I found it plentifully on two small *Wellingtonia* trees on the outskirts of Oxford, and immolating itself in considerable numbers on a newly-varnished fence beneath. This probably explains why it has come to light in my own house at Oxford, far from any juniper but at no great distance from some *Wellingtonia*. I have taken it at light in a similar manner at Milford in Surrey; but there it might have come (as suggested in the Victoria County History of Surrey) from ornamental junipers in gardens. *A. aurulentella* Stt. is common among juniper on the Oxfordshire Chilterns. *A. praecocella* Z. is common among juniper on the Chilterns, the actual localities being near Stokenchurch in Bucks, Chinnor, and Watlington in Oxfordshire. It also occurs on the Moulsoford Downs in Berkshire, and should be added to the Berkshire county list. *A. arceuthina* Z. is common among juniper on the Chilterns above

Watlington. *A. abdominalis* Z. appears to be scarce. I have two specimens, not in very good condition but quite easily recognisable, one taken near Stokenchurch in Bucks on Aug. 3rd, 1914, the other taken at Streatley in Berks on Aug. 8th, 1919. It is an addition to the Berkshire list (the Buckinghamshire county list mentions no species of *Argyresthia*). *A. atmoriella* Bnks. is common on larch at Cothill (Berks) and probably in many other places in this district. On the strength of the article by Mr. E. R. Banks, which appeared in this Magazine, vol. xxxii (=Second Series, vol. vii), 1896, p. 25, I should not have hesitated to call the species that occurs here *A. laevigatella* HS. rather than *A. atmoriella*. I have a good typical specimen of *A. atmoriella* which I took in June 1913 near New Radnor (Wales), and find the Oxford specimens to be decidedly and uniformly lighter in shade, and to have the hind-wings distinctly lighter than the fore-wings. But Mr. J. Hartley Durrant, F.E.S., to whom I have shown specimens, assures me that they should all be referred to *atmoriella*, *laevigatella* being a very doubtful species. *A. glabratella* Z. is an interesting addition to the local list. I have five examples of this species, which Mr. J. Hartley Durrant very kindly identified for me. They were taken as follows:—Two in Wytham Woods (Berks) on June 5th, 1913; one in the same locality on June 3rd, 1916; and two on the Chilterns above Watlington (Oxfordshire) on May 31st, 1914. In each case they were disturbed from old spruces. I have not yet succeeded in finding the species in any numbers, but should not be surprised if it is fairly common. Under the name *Blastotere glabratella*, this little moth was introduced into the British list in 1906 by Lord Walsingham (Ent. Mo. Mag. vol. xlii, p. 169). but it has not hitherto been recorded from any British county except Norfolk. In the Ent. Mo. Mag. for Nov. 1920 (p. 259) I wrongly recorded this species as *Argyresthia illuminatella* Z. I have not yet come across the true *A. illuminatella*, which is apparently not a spruce-feeder; it is in fact hardly likely to occur here, owing to the absence of any extensive pine-woods.—E. G. R. WATERS, 40 Leckford Road, Oxford: Jan. 12th, 1921.

Two records of Hemiptera.—Among some Hemiptera recently sent by me to Mr. E. A. Butler, who has been good enough to name them, are two specimens that deserve notice. The first is a developed female of *Mecomma ambulans* Fall., from Culgaith, Cumberland, only three other macropterous British examples of which are known. The other insect is a male of *Ulopa trivia* Germ., from Tidworth Pennings, Wilts.—G. E. HUTCHINSON, Aysthorpe, Newton Road, Cambridge: January 16th, 1920.

Andrena jacobii n. n. for *A. trimmerana* auct. and a new Irish variety of this species.—Recently through the kindness of the Rev. W. F. Johnson I was able to examine a small series of Irish *Andrena trimmerana* auct. None of the females sent belonged to the common English form, but were either var. *scotica* or a still more extreme variety, which I have named *johnsoni* n. var. In this variety the thoracic hairs become to a greater or less extent fuscous or sooty; even those on the propodeum are more or less sordid. The yellow hairs of the first two abdominal segments are reduced in number; those on the basal part of the first are black. The extreme form of *johnsoni* would be an insect

clothed above entirely with sooty-black hairs, and I have little doubt that such specimens will be found. For the ordinary English *trimmerana* auct. the name *jacobi* n. n. is suggested, this being the form recorded by Kirby as "*capta a D. Jacobo Trimmer*" and also his var. β "*lecta mense Maio*." His type of *trimmerana* captured "Augusto medio 1799" is, as I have previously recorded, a specimen of the second brood of *spinigera* K.—R. C. L. PERKINS, 4 Thurlestone Road, Newton Abbot: *January 15th, 1921.*

✓ *Monstrous form of Salix exaltatus*.—In this Magazine for 1914, p. 219, I described a monstrous form of *Salix exaltatus*, of which two examples were captured at Bovey Tracey, and I referred to the fact that Mr. A. H. Hamm had taken a similarly abnormal Pompilid. Recently I have seen Mr. Hamm's specimen, and it is the same species and was captured in the same neighbourhood as those taken by myself, but many years before. That such a monstrosity should either persist or reappear is very remarkable. The great development of the eyes might suggest a cross between *Salix* and *Astata boops*, which is found in the locality, but in no other respect is there any approach to the latter genus.—R. C. L. PERKINS: *January 15th, 1921.*

Review.

"LEPIDOPTERA OF THE CONGO, BEING A SYSTEMATIC LIST OF THE BUTTERFLIES AND MOTHS COLLECTED BY THE AMERICAN MUSEUM OF NATURAL HISTORY CONGO EXPEDITION, TOGETHER WITH DESCRIPTIONS OF SOME HITHERTO UNDESCRIBED SPECIES." [Bulletin of the American Museum of Natural History, Vol. xliii, Art. vi, pp. 109-369, with 9 Plates (vi-xiv) and 9 Text-figures. New York. Issued December 4th, 1920.] By W. J. HOLLAND, LL.D.

The collection upon which this paper is based is stated to be one of the largest that has been made in recent years in the Congo Region, it being particularly rich in Nymphalidae and other conspicuous forms. But little attention, however, was paid to the moths, and scarcely any collecting was done at night. Altogether, about 9000 specimens were obtained by the Expedition, representing 725 species or varieties—482 *Rhopalocera* (37 new, with two new genera) and 243 *Heterocera* (40 new). The chief localities worked are:—Medje, a point near the Nepoki River, in the heart of the forest; Niangara, on the Uelle River; and Faradje, upon the Dungu, an eastern affluent of the Uelle, the dates extending over the years 1910-1912. As a whole, the material examined is said to have a distinct W. African facies, though Niangara and Faradje are places not far distant from the E. African or Abyssinian region, which sends a long, narrow, westward projection south of the Sahara towards the mouth of the Senegal. The seven plates devoted to the butterflies illustrate species of the genera *Cymothoë*, *Precis*, *Euphaedra*, *Neptis*, *Telipna*, *Diestogyna*, etc. Dr. Holland has already contributed numerous papers on African *Lepidoptera* to various scientific journals, and his Catalogue of the African Hesperiiidae (1896) is still a useful work of reference, Dr. Aurivillius not including them in his "*Rhopalocera Aethiopica*."

Societies.

YORKSHIRE NATURALISTS' UNION: ENTOMOLOGICAL SECTION.—The Annual Meeting of the Entomological Section of the Yorkshire Naturalists' Union was held in the Leeds Institute on October 30th, 1920. The chair was taken by Mr. G. T. PORRITT, F.L.S., F.E.S., the President of the Section. There was a large attendance of entomologists from all parts of the county. With a few additions and alterations the various committees were re-elected. A matter of extreme interest to the Section is the election of Dr. H. H. Corbett, F.L.S., of Doncaster, to the Presidential Chair of the Yorkshire Naturalists' Union for 1921. A pleasing feature of the Annual Meeting was the addition of new blood to many of the committees and the presence of several younger members of the entomological family.

The various reports, as given by the secretaries of the sections, contain much of interest; though the consensus of opinion is that insects of all orders have been unusually scarce.

In *Lepidoptera*, Mr. B. Morley reports that the season has been one of the worst on record. The common white butterflies have been rarely observed, but there was an immigration, accompanied by *Plusia gamma*, of *Vanessa curdii* and *V. atalanta* in the spring, which latter insect produced an abundant autumnal brood.

An interesting addition to the list of Yorkshire *Lepidoptera* is *Nonagria arundineta*, a colony of which was discovered in Wharfedale by the Rev. Cyril D. Ash. The melanic var. *dissoluta* occurred with the type. Mr. Ash also reports two examples of *Agrotis praecox* from the East Riding, near Holme-on-Spalding Moor. This is essentially a coast species, but as the soil is sandy near Holme its occurrence may be compared to the occasional captures inland of littoral *Coleoptera*, e.g. *Broscus cephalotes*, which is well established on certain sandy tracts near Doncaster.

Mr. T. A. Lofthouse, F.E.S., obtained two specimens of the local Tineid *Anesychia funerella*, a Wicken Fen speciality, near Staithes. The only previous record is by Mr. J. Sang at Richmond. Mr. Lofthouse has also added the following eight species as new to the county list:—*Paedisca sinuana* Hübn. among birch; *Lipoptycha aeratana* Pierce, at Lealholm and Ingleby Greenhow; *Eupoecilia affinitana* Dougl., near Grangetown Station; *Micropteryx sangii* Wood, at Bisedale; *Blastotere glubratella* Zell., on the Eston Hills; *Coleophora artemisiella* Scott, at Fleet; *Laverna hellerella* Dup., at Middlesbrough; *Opostega salaciella* Tr., at Acklam and Middlesbrough. Mr. Morley has added *Heliodes tenebrata*, *Apamea leucostigma*, and *Peronea aspersana* to his local list for the Skelmanthorpe district. *Plusia moneta* appears to be spreading in the county, and there are new records from all three Ridings; and *Acherontia atropos* has turned up in two places in the West Riding. Mr. G. T. Porritt has found the larvae of *Sciaphila sinuana* abundantly near Huddersfield, and took a fine rayed variety of *Melanippe hastata* in Honley Wood, Huddersfield. Dr. Corbett finds that *Phigalia pedaria* was extremely abundant, in the Doncaster district, in great variety, as early as January. *Hybernina defoliaria* and *Himera pennaria* were also common during the winter, but *Cheimatobia brumata* and *Hybernina aurantiaria* were scarce, and

the latter insects were below normal size. The larvae of *Notodonta dictaea* were fairly common on *Populus canadensis* and *P. tremula* (pale green in colour on the former, and mottled brown on the latter), and one larva of *N. ziczac* occurred on aspen. *Choreutes scintillulana* was in swarms at Askern. Dr. Corbett has also added *Carpocapsa splendana* (Doncaster), *Adela rufinitrella* var. *maculata* (Askern), and *Oxyptilus teucris* (Hattfield) to the Yorkshire list. This latter insect occurred commonly in July on wood-sage in an uncultivated field.

The report on *Coleoptera* by Dr. W. J. Fordham, F.E.S., was brief, as a complete list of the results of the work of members of the Coleoptera Committee is usually published early in the following year in "The Naturalist," and at the date of the meeting a great number of the insects taken had still to be verified by the referees. There are, however, several interesting additions to the county list, including *Dytiscus circumflexus*, which occurred in fair numbers near Hull, in company with the common *D. punctulatus* and *D. marginalis*. A few species of beetles occurred in large numbers, but the majority of the committee have found a very great diminution in the numbers of species usually common.

For *Hymenoptera*, Mr. R. Butterfield, F.E.S., reports a disappointing year, but the early spring bees were abundant. The event of the season has been the discovery by Mr. A. E. Bradley of *Andrena ruficornis* Nyl. in large numbers near Leeds. The burrows occurred in the embankment of an old disused reservoir and were mixed with those of *A. clarkella*. Mr. Bradley has found *Nomada fabriciana* associated with *Andrena angustior* at Adel, and Mr. Butterfield found *N. lathburiana* in great numbers towards the end of May in Wharfedale associated with *Andrena cineraria*, but no males were seen. The latter also records *Andrena subopaca* Nyl. (new to the county) from Keighley and Grassington, and *Megachile circumcincta* from Bingley. Mr. Bradley has found six nests of *Vespa sylvestris* underground. Fossorial *Hymenoptera* have been rare, only common species of *Crabro* and *Salix* having been seen. A few sawflies have been added to the county list, including three species of the difficult genus *Tenthredopsis* and *Pachyprotusis variegatus*.

In *Neuroptera* and *Trichoptera*, Mr. Porritt found little to report. *Tinodes aureola* occurred in plenty about dripping rocks in July near Huddersfield, and *Stenophylax vibex* was also taken in the same district. Since the meeting, *Boreus hyemalis*, a species new to the county list, has been taken by Mr. G. B. Walsh at Scarborough, and by Mr. C. A. Cheetham at Austwick, in both cases in November.

In *Diptera*, Mr. C. A. Cheetham, F.E.S., reported that over 300 additions had been made to the Yorkshire list, by field work during the year and by research work among old collections and unpublished lists. Good collecting days have been few, and *Syrphidae* have been scarce, with the exception of those with aquatic larvae. Mosquitoes have had their share of attention, and several new species have been added to the list, including the recently described *Theobaldia arctica* Edw.

Among the numerous exhibits may be mentioned the following:—

Lepidoptera.—Mr. Porritt, a rayed form of *Melanippe hastata* from Honley; two specimens of *Aplasta ononaria* from Folkestone (from the Webb

collection); and the vars. *gloriosa* and *iochalca* of *Abraxas grossulariata* Dr. H. D. Smart, F.E.S., *Thecla betulae* ab. *spinosa* and pale *Luperina testacea* from South Devon; dark *Bryophila perla* from Shelley; a series of *Syrichthus malvae* approaching ab. *taras*, and a variable series of *Tanessa urticae*, *Polymnatus phlaeas*, and *Eugonia quercumaria*; and specimens of *Macrogaster castaneae* from Wicken in June last. Dr. E. O. Croft, F.E.S., showed *Colias edusa* from South Devon; a variable series of *Odontopera bidentata* from Leeds; and the continental *Araschnia levana* with its varieties. Dr. Corbett showed a case of specimens of *Asphalia flavicornis* and *Hybernia leucophaearia* resting on birch-bark, and species of *Lepidoptera* taken by him in the Doncaster district during the year, many of which are noted above, with the addition of *Zeuzera pyrina*, *Asteroscopus sphinx*, *Scoparia angustea*, *Herbula cespitalis*, and *Amphysa prodromana*. Mr. Edward Cocker showed a fine series of *Arctia caja* from Huddersfield, including a remarkable creamy suffused specimen bred during the year. Mr. B. Morley: a long series of *Culymnia affinis* (very large and variable and some almost black) from the Doncaster district, and specimens from the South of England, which were smaller and of quite distinct coloration, for comparison.

Coleoptera.—Dr. Corbett showed *Cassida nobilis* and *Cryptocephalus fulvus* from Doncaster. Dr. Fordham: *Plagiarthrina fordhamiana* Keys from flood-refuse, Bubwith, East Yorks; *Stenostola ferrea*, Edlington; *Pachyta cerambyciformis*, Wharcliffe; *Phytodecta rufipes* (new to the county), Martin Beck Wood, and several other species of interest, including a melanic aberration of *Athous vittatus* from Edlington. Masters Caird, Hincks, and Kitchen (of the Leeds Naturalists' Club) showed series of many species of *Coleoptera* taken near Leeds, some being new to the district and including many *Chrysomelidae* and various *Necrophori*. Of the other species, *Rhynchites nanus*, *Linomius minutus*, *Silpha sinuata*, and *Necrobia ruficollis* may be specially mentioned.

Diptera.—Mr. C. A. Cheetham showed a case of Yorkshire mosquitoes and slides of their larvae, and among several flies shown by Mr. Morley were *Gynnochaeta viridis* (new to the county) and *Xylophagus ater*, both from Skelmanthorpe.

Hymenoptera.—Mr. Bradley showed a long series of males of *Bombus lucorum*, with coloration mainly of the female 'type' taken in Littondale, N.W. Yorks. They were abundant on the high *Calluna* moors, and apparently replaced the common form. He also showed variable series of *Psithyrus campestris*, *distinctus*, and *quadricolor*, and a very dark queen of *Vespa rufa*. Mr. Butterfield showed specimens of British *Andrenidae*. Mr. Bradley read a paper on his observations during the past season, and mentioned that the females of *Andrena lapponica* had been observed on several occasions taking pollen from the Cat's Ear (*Hypochaeris radicata*) near Leeds. Farther from the city, where bilberry occurs, they appear to confine themselves to this latter plant, as is usually considered to be their habit. At the end of August, ragged and worn queen *Bombi* were frequently found gathering pollen from various flowers. This is unusual, and probably due to the failure of the brood of workers.

A pleasing innovation in the work of the section has been introduced during the year in the form of a field meeting near Leeds, led by Mr. P. H.

Grimshaw, F.E.S., of the Edinburgh Museum. On this occasion *Diptera* were the subject of investigation, and an interesting and instructive talk on the order was given by Mr. Grimshaw at the close of the ramble. It is hoped to arrange similar meetings annually, when other authorities on various orders will be present, and thus give a stimulus to the study of entomology in the county.—W. J. FORDHAM, Hon. Sec.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
November 11th, 1920.—Mr. K. G. BLAIR, F.E.S., President, in the Chair.

Mr. A. F. Hemming, F.L.S., F.E.S., Treasury Chambers, S.W. 1, was elected a member.

Mr. Grosvenor exhibited numerous species of *Limenitis*, *Athyna*, and *Neptis* from Thibet and the Indo-Malay Region. Mr. Newman, gradations from the dark Rannoch form to the very light southern form of *Polyphlocia flavicornis*. Mr. Barnett, a *Mimas tiliae* with the usual transverse bar reduced to a small triangular discal spot. Mr. B. S. Williams, a *subradiata* form and a *caeruleopunctata* form of *Rumicra phlaeus* from Finchley. Mr. A. A. W. Buckstone, several series of *Hygrochroa syringaria*, bred and inbred from larvae taken at Wimbledon in 1913, 1915, and 1919, with captured specimens, and read notes on the pairings and broods obtained; he also showed living pupae and imagines of *Pyrausta atalanta*, and full-fed larvae of *Abraeus grossulariata*. Dr. Dixey, F.R.S., read a paper on "Sexual Dimorphism," illustrating his remarks with a large number of coloured diagrams and a series of lantern-slides.—H. J. TURNER, Hon. Editor of *Proceedings*.

SOME NEW ORTHOPTERA FROM THE CAUCASUS.

BY B. P. UVAROV.

The following new Orthoptera are described from specimens in the Caucasian Museum (Tiflis), where the types are preserved:—

1. POECILIMONELLA, gen. nov.

♂. Generibus *Poecilimon* Fieb. et *Barbitistes* Charp. proximus. Caput parvum, subglobosum, vertice valde declivi, fastigio tuberculato minimo, supra planissimo et parum sulcato. Antennae tenues (longitudine incerta). Pronotum subcylindricum, leviter sellaeformiter impressum, sulco transverso typico ante medium sito, metazona haud dilatata et parum evanescente, postice late triangulariter emarginata, elytra usque ad venam plicatam tegente. Elytrum sinistrum margine interno angulum rectum formans, ante angulum ditum rotundato emarginatum. Meso- et metasternum transversa, foramina basalia liberantia. Femora antica pronoto parum longiora. Abdomen cylindricum, segmento ultimo ut in *Poecilimone* constructo. Lamina supra-analis rotundata, valde impressa. Cerci crassi, hirsuti, pone medium incurvi, sub lamina subgenitali apicibus obtuse conicis nigris subcontigui. Lamina subgenitalis magna, parte postica valde evanescent, navicularis, apice parum dilatato, triangulariter emarginato.

Poecilimonella armeniaca, sp. n.

♂. Statura parva. Rufo flavescens, fusco-punctatus. Antennae nigro annulatae. Occiput nigro punctatum. Pronotum in prozona flavescens, fusco punctatum, in metazona lateraliter rufo bivittatum, medio rufescens; lobi deflexi pallidi, margine inferiore et posteriore late rotundatis. Elytra pronotum parum superantia, disco infuscato. Pedes nigro adpersi. Abdomen indistincte rufo conspersum punctisque nigris, in linea mediana praecipue congregatis, vitta longitudinali imitans, ornatum. Cerci crassi, breviter hirsuti, usque ad medium recti, dehinc rotundato inflexi, sensim acuminati, apice ipso nigro, obtuse conico.

| | | |
|--------------------|-------|--------|
| Longitudo corporis | | 14 mm. |
| „ pronoti | | 3.5 „ |
| „ elytrorum | | 1.5 „ |
| „ femori ant. | | 4 „ |
| „ „ post. | | 11.5 „ |

Patria. Transcaucasia meridionalis: Sarykamys, prov. Kars, 3.v.1914, 2 ♂ ♂ (*Poltoratsky* leg.).

This small Phaneropterid is very like a *Poecilimon*, but the form of the subgenital plate is peculiar, it being not unlike that of *Barbitistes* Charp. and *Kurdia* Uvar.; the shape of pronotum is also different from that of *Poecilimon*.

It is very interesting to note here that the Orthopterous fauna of the Caucasus and Western Asia includes no less than seven apterous genera of the family Phaneropteridae, three of them having been described by me quite recently; they are as follows: *Orphania* Fieb., *Poecilimon* Fisch., *Poecilimonella* Uvar., *Isophya* Br. W., *Phonochorion* Uvar.,* *Kurdia* Uvar.,† and *Leptophyes* Fieb. For the identification of these genera I propose the following key:—

- 1 (2) Meso- et metasternum postice lobata, foramina basalia tegentia. Lamina subgenitalis ♂ elongata, attenuata, apice angulatim emarginata. Cerci ♂ adunci, laminam subgenitalem amplexantes vel breviores, simpliciter incurvi. Ovipositor pronoto longior, subhorizontaliter productus, apicem versus incurvus, in tertia parte apicali utrinque acute denticulatus *Orphania* Fisch.
- 2 (1) Meso- et metasternum postice truncata, impressiones basales liberantia.
- 3 (14) Femora antica pronoto parum vel sesqui superantia. Ovipositor apicem versus serrulato dentatus (in generibus *Poecilimonella* et *Phonochorion* ♀ incerta).
- 4 (7) Pronotum sulco transverso typico ante medium sito, elytra in ♂ ultra venam plicatam tegens.
- 5 (6) Pronotum postice haud fornicatum et dilatatum. Lamina subgenitalis ♂ navicularis, valde evanescens, apice angulatim emarginata. Cerci ♂ post laminam subgenitalem contigui. . . *Poecilimonella* Uv.

* Bull. du Musée du Caucase, x, pp. 45-53, fig. 1.

† Bull. du Musée du Caucase, x, pp. 121-122, figs. 1-4.

- 6 (5) Pronotum postice dilatatum ac fornicatum. Lamina subgenitalis ♂ plana, haud evanescens, cercos parum superans. *Poecilimon* Fisch.
- 7 (4) Pronotum sulco transverso typico pone medium sito, elytro fere tota liberans.
- 8 (11) Lamina subgenitalis ♂ navicularis. Cerci ♂ infra laminam subgenitalem decussati vel contigui.
- 9 (10) Vena plicata elytri sinistri ♂ obliterata. Cerci ♂ flexuoso curvati, decussati *Barbitistes* Charp.*
- 10 (9) Vena plicata elytri sinistri ♂ haud obliterata. Cerci simpliciter incurvi, infra laminam subgenitalem apicibus contigui
.... *Kurdia* Uvar.
- 11 (8) Lamina subgenitalis ♂ plana. Cerci supra laminam subgenitalem positi.
- 12 (13) Metazona pronoti ♂ fere perpendiculariter erecta, dilatata, postice orbicularis *Phomochorion* Uvar.
- 13 (12) Metazona pronoti ♂ parum elevata et vix dilatata, postice recte truncata vel subemarginata *Isophya* Br. W.
- 14 (3) Femora antica pronoto duplo longiora. Ovipositor margine superiore subrecto, apice tantum minutissime serrulatus. Cerci ♂ breves, subrecti, obtusi. Lamina subgenitalis ♂ plana, apice valde attenuata, margine postico recto truncato vel emarginato
.... *Leptophyes* Fieb.

2. *Isophya caucasica*, sp. n.

Statura media. Glauco-viridis vel rufescens, sparse rufo conspersa. Fastigium verticis apice haud angustatum, sulcatum. Pronotum in ♂ vix constrictum, supra planum, postice sat dilatatum, carinis lateralibus distinctis, in parte antica parallelibus, in parte postica divergentibus, nigris vel rufis, infra pallido delineatis, margine postico pronoti recto; in ♀ pronotum supra gibbulosum, carinis lateralibus nullis, per vittis rufis suppletis. Elytra ♂ ampla, rugosa, viridia vel rufescentia, pronoto parum longiora, angulo externo acuto. Abdomen viride, vittis duabus lateralibus, sat latis, pallidis, vel pallide-violaceis, parum distinctis, ornatum.

♂. Lamina supra-analis aequae longa ac lata, apice rotundata, vel parum emarginata. Cerci a basi sensim attenuati, fere recti, apicem versus parum inflexi, apice ipso in spinam nigram sat longam ac acutam attenuati. Lamina subgenitalis magna, a basi apicem versus angustata, bicarinata, apice profunde triangulariter emarginata, lobis acutis.

♀. Lamina subgenitalis minuta, transverso-triangularis. Ovipositor valde decurvus, apice parum dilatatus, pronoto dimidio longior.

| | ♂. | ♀. |
|--------------------------|-----------|-----------|
| Longitudo corporis . . . | 16-18 mm. | 17-20 mm. |
| „ pronoti | 3.5-4 „ | 4 „ |
| „ elytrorum . . | 4.5 „ | 2 „ |
| „ femori ant. . . | 5 „ | 5 „ |
| „ „ post. . . | 15-16 „ | 15 „ |
| „ ovipositoris. . | — | 6 „ |

* Not found, as yet, in the Caucasus and Western Asia.

Patria. Caucasus centralis, prov. Tiflis: Gudaur, 25.viii.15, 6 ♂ ♂, 4 ♀ ♀ (*Ipsse* leg.); Kazbek, 26.viii.15, 1 ♂, 2 ♀ ♀ (*Ipsse* leg.); Mlety, 17.viii.16, 3 ♂ ♂ (*B. Vinogradov* leg.).

This species is the single representative of the genus *Isophya* in the Alpine zone of the main Caucasian chain, being distributed between 5-7000 ft. of altitude.

3. *Isophya bivittata*, sp. n.

Flava, vel virescens, rufo-conspersa. Fastigium verticis apicem versus angustatum, supra plus minusve sulcatum. Pronotum in ♂ medio constrictum, selliforme, postice dilatatum ac elevatum; carinis lateralibus distinctis, obtusis, medio angulatum inflexis, nigris vel fuscis; carinula mediana tenuissima postice perspicua; margine postico late rotundato-emarginato; in ♀ pronotum planiusculum, carinis lateralibus subobliteratis. Elytra in ♂ pronoto subaeque longa, rufa, rugosa, margine antico pallido, in ♀ pronoto subduplo breviora, obtuse-rectangularia. Abdomen punctis rufis conspersum, vittis lateralibus nigris, infra et supra acute delineatis ornatum (in ♀ vittae ditae saepe oblitteratae). Pedes anteriores et mediae longae.

♂. Lamina supra-analis rotundata, transversa. Cerci crassi, pilosi, in tertia parte apicali rotundato-incurvi, parum attenuati, apice ipso obtuso, spinula brevissima, crassa, supra posita armati. Lamina subgenitalis fornicata, carinis lateralibus nullis vel apice tantum parum expressis, carinula mediana nulla, marginibus rectis, parallelis, in quarta parte apicali angustata, apice sat profunde rotundato-emarginata, lobis apicalibus subacutis.

♀. Ovipositor longitudine tota regulariter incurvus, pronoto fere duplo longior. Lamina subgenitalis transversa, semicircularis.

| | ♂. | ♀. |
|--------------------------|-----------|-----------|
| Longitudo corporis . . . | 16-18 mm. | 18-21 mm. |
| " pronoti | 3.5-4 " | 4 " |
| " elytrorum . . | 4 " | 1.5-2 " |
| " femori ant. . . | 6-7 " | 6 " |
| " " post. . . | 15-16 " | 16 " |
| " ovipositoris . . | — | 7-8 " |

Patria. Transcaucasia, prov. Tiflis: declivis montis Chotchaldagh prope Lagodechi, alt. 7000 ft., 3.viii.16, 4 ♂ ♂, 3 ♀ ♀ (*Uvarov* leg.); Bakuriani, 6000 ft., 7.viii.14, 1 ♂, (*V. Kozlovsky* leg.).

This species is well characterized by the peculiar form of the male pronotum and by the very sharply marked black stripes on the sides of the abdomen. It looks rather like a *Leptophyes*, owing to its long fore and middle legs, but is easily distinguished by the generic characters.

4. *Leptophyes nigrovittata*, sp. n.

L. punctatissimae Bosc proxima. Viridis, flavescens, vel rufescens, vittis angustis, acute delineatis nigris ab oculis per margines superiores lorum flexorum pronoti usque ad apicem abdominis perductis ornata (in abdomine

vittae ditae saepe oblitteratae). Fastigium verticis supra parum vel haud sulcatum. Antennae longissimae, fusco conspersae. Pronotum supra planiusculum, sulco transverso typico valde expresso, in ♂ postice parum elevatum. Elytra in ♂ tota libera, angulo interno valde prominulo, basi macula nigra, vittisque duabus obliquis lateralibus nigris ornata, in ♀ rotundata, dimidiam longitudinem pronoti superantia, disco nigrescente.

♂. Lamina supra-analis sat magna, aequae longa ac lata, semicircularis. Cerci hirsuti, basi crassi, apicem versus sensim acuminati et parum incurvi, apice ipso obtusissimo, spina interna magna obtuse armata. Lamina subgenitalis magna, longitudine toto medio carinulata, ab medio apicem versus angustata, apice ipso haud lato, recte truncato.

♀. Lamina subgenitalis transversa, carinulata, apice medio attenuata. Ovipositor pronoto subduplo longior, margine superiore et inferiore regulariter incurvis, ut in *L. punctatissimae* serrulatus.

| | ♂. | ♀. |
|----------------------------|-----------|--------|
| Longitudo corporis | 16-18 mm. | 18 mm. |
| „ pronoti | 2.5-3 „ | 3 „ |
| „ elytrorum .. | 2.5-3 „ | 2 „ |
| „ femori ant. .. | 5-6 „ | 6.5 „ |
| „ „ post. . . | 13-16 „ | 15 „ |
| „ ovipositoris. . | — „ | 7 „ |

Patria. Transcaucasia, prov. Tiflis, districtus Lignach: Lagodechi, 8.vi.16, 1 ♂ (*N. Tanassijchuk* leg.), 3.viii.16, 4 ♂ ♂, 1 ♀ (*Urusov* leg.); Tchiaury, 8.viii. 17, 1 ♂ (*N. Archangelsky* leg.).

This insect is very closely related to *Leptophyes punctatissima*, but it can be easily distinguished from the latter by its larger dimensions and peculiar coloration, and by the very slightly curved male cerci and the shorter ovipositor of the female.

5. *Paradrymadusa satunini* Uvarov,* ♀ nova.

Coloratione staturaque mari simillima. Elytra basi segmenti secundi abdominis attingentia. Segmentum anale in modo ♂ constructum, lobis brevioribus. Lamina subgenitalis crassa, apice parum obtus-angulatim emarginata, lobis late rotundatis. Ovipositor parum recurvus, pronoto subduplo vel duplo longior.

| | |
|------------------------------|-----------|
| Longitudo corporis | 23-26 mm. |
| „ pronoti | 6.5-7 „ |
| „ elytrorum | 2.5-3.5 „ |
| „ femori ant. | 7-7.5 „ |
| „ „ post. | 19-21 „ |
| „ ovipositoris | 10-13 „ |

Patria. Transcaucasia meridionalis: Ordubad ad fl. Arax.

The male of this species was known by me in 1916. Some females

* Bull. du Musée du Caucase, x, 1916, pp. 50-51.

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EDITED BY

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THE MUSEUM, HULL;

AND

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TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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Third Series, No. 75.]
[No. 682.]

MARCH, 1921.

[PRICE 2/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

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VOLUME LVII.

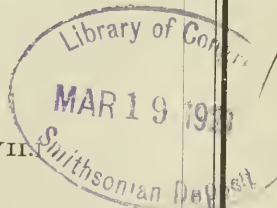
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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41, Queen's Gate, S.W. 7.—
March 2nd, 16th, April 6th, May 4th, June 1st.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, 44 Belfast Road, Stamford Hill, N. 16.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.—
This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

having been subsequently received, it is now possible to compare *P. satunini* with *P. maculata* Ebner,* described on that sex only. The female of the insect described by me differs from that of *P. maculata* by the following characters:—In the general dimensions it is a little larger, the posterior femora are not so sharply spotted, and the hind margin of the lateral lobes of the pronotum is straight; the most striking difference, however, is in the length of the hind femora and ovipositor—in *P. maculata* the ovipositor is more than twice, and hind femora more than three times, longer than the pronotum; in *P. satunini* the ovipositor is less than twice, and hind femora less than three times, longer than the pronotum.

6. *Olythoscelis distincta*, sp. n.

Statura minuta, gracilis. Castanea, nigro et pallido ornata. Frons pallida, punctis nigris 4-signata, necnon clypeus 4-punctatus, labrumque bipunctatum. Occiput castaneum, nigro-marmoratum, lineola mediana angusta distinctissima pallida, vittisque latis postocularibus nigris ornatum. Pronotum supra rotundatum, metazona postice producta, medio parum carinulata, lobis deflexis nitido-nigris, discum versus pallidioribus, margine inferiore posterioreque angusto ac distinctissimo albido fasciatis. Femora postica nigro vittata.

♂. Elytra infusata, saepe fere tota nigra, venis pallidioribus, sat prominentia. Segmentum anale ad marginem posticum rotundato-impressum, margine ipso sat late rotundato-emarginato, lobulis distantibus, angustis hamuliformibus. Lamina subgenitalis sat magna, flava, lateraliter nigro limbata, medio carinulata, postice triangulariter excisa. Cerci tenui, parum incurvi, apicem ante dente minimo armati.

♀. Elytra lateraliter, vix prominentia. Lamina subgenitalis obtuse triangularis, parum incrassata, apice triangulariter excisa, lobis obtuse rectangularibus. Ovipositor subincurvus, tenuis, pronoto duplo longior.

| | ♂. | ♀. |
|-------------------------|-----------|-----------|
| Longitudo corporis | 19-23 mm. | 20-24 mm. |
| „ pronoti..... | 7.5-8 „ | 8-8.5 „ |
| „ elytrorum .. | 2-3 „ | 0.5 „ |
| „ femori post.... | 18-20 „ | 20-22 „ |
| „ ovipositoris .. | — „ | 15-17 „ |

Patria. Transcaucasia, prov. Tiflis: Borshom, Bakuriani, Tsarskije Kolodtsy, Manglis, Mtskhet, 10 ♂ ♂, 8 ♀ ♀.

This species belongs to the group *O. varia-bucephalus*, its nearest allies being *O. signata* Br. W. and *indistincta* Bol., and is easily recognised by the small dimensions, the very sharp and narrow white border of the lateral lobes of the pronotum, and the form of the last abdominal segment.

* Annalen k. k. Naturhistor. Hofmuseums, Wien, xxvi, 1912, pp. 446-447, fig. 2.

7. *Platyceles burri*, sp. n., ♂.

♂. *Pl. bicolor* Phil valde affinis, sed statura majore. Pallido viridis vel flavescens. Pronotum supra infuscatum, planiusculum, carinis lateralibus obtusis, subparallelibus (antice ac postice vix divergentibus), carina mediana cu tertina parte postica tantum perspicua. Elytra abdomine parum breviora, hyalina, apice latissimo, rotundato. Alae abortivae. Segmentum anale postice rotundato-excavatum, longe pilosum, margine postico profunde ac late triangulariter exciso, lobis acutis triangularibus. Cerci longi, parum incurvi, apicem ante dento plano, lato armati. Lamina subgenitalis medio subcarinuiata, postice rotundato-triangulariter excisa, stylis longis.

| | |
|------------------------------|-----------|
| Longitudo corporis | 24-26 mm. |
| „ pronoti | 7-7.5 „ |
| „ elytrorum | 14-15 „ |
| „ femori post. | 24-25 „ |

Patria. Transcaucasia, prov. Elisavetpol: Geok-Tapa, 22.vi.15, 1 ♂ (*M. Burr* leg.), 30.vi.15, 1 ♂ (*A. Shelkornikov* leg.).

This peculiar *Platyceles* was taken by Dr. Malcolm Burr in Geok-Tapa, and has been named by him *Locusta shelkornikovi*, sp. n. (in litt.—in the collections of the Caucasian Museum at Tiflis), it being very like a *Locusta* at first sight. I have great pleasure in naming the insect after him, as he has done so much for our knowledge of the Orthoptera.

P. burri ought to be included in the same group as *P. roeseli* Hagenb. and *P. bicolor* Phil., but it is very easily distinguished from those insects by the larger size, different coloration, and the form of cerci.

8. *Gryllus tartarus obscurus*, subsp. n.

A forma typica differt: corpore nigro, griseo-hirsuto; capite nigro fasciis duobus transversis pallidis ornato; pronoto pedibusque fuscis, indistincte pallido irroratis.

Patria. Ciscaucasia orientalis: vallis fl. Manytch et Kuma; Transcaucasia orientalis: Mtskhet; Transcaucasia meridionalis: Kaghyzman; Persia septentrionalis: Maraga.

I have already stated* that specimens of *Gryllus tartarus* from the North-Eastern Caucasus differ from the typical form (from Turkestan and Transcaspiä) by their much darker colour. The same character also applies to the examples from Transcaucasia and Northern Persia, and I propose to regard them as a distinct geographical race of *G. tartarus*.

London:

October 1920.

* Bull. du Musée du Caucase. ix, 1915, p. 18.

SOME LEPIDOPTERA FROM EASTERN FRANCE.

BY F. C. WOODFORDE, B.A., F.E.S.

The following account of some *Lepidoptera* captured in the extreme north of the Department of Haute Saône from July 21st to September 25th, 1920, may be interesting to some of your readers. During the last week of July, *Papilio machaon* and *Colias hyale* were common in the permanent clover fields, and both when bent on feeding were easy to catch, but many flew wildly about without taking any notice of the flowers, and were then quite impossible. During that week and the next *Lycaena baton* and *semiargus* were also common in the clover-fields, and *Chrysophanus dorilis* was not uncommon. On rough ground, on the outside of a very large wood, *Lycaena urion* showed itself, but only in very small numbers, and I did not see a dozen altogether. Of *L. argiades* I caught two specimens, one on July 25th, the other on September 11th. *L. argiolus*, *L. coridon*, and *L. aegon* were all very scarce, and of *C. phlaeus* I did not see a single specimen during the whole of my stay. At the end of August I saw and caught two worn specimens of *Zephyrus betulae*, male and female. This is a butterfly that seldom is seen on the wing, but from the quantity of sloe growing everywhere in the district, I suspect that plenty of larvae could be taken in June.

C. edusa was flying from July 25th up to the beginning of September, but was quite uncommon, and I did not see more than a dozen specimens altogether.

During August, *Aglais urticae*, *Vanessa io*, *Pyrameis cardui* and *atalanta* were flying, but none of the species were in abundance. One very worn *Polygonia c-album* was caught at the end of July, and a freshly-emerged specimen was seen about the middle of September. *Limentis sibylla*, *Dryas paphia*, and *Argynnis adippe* were common, but very much worn up to the middle of August. One specimen, very worn, of *A. aglaia* was seen at the end of July. From August 7th to 29th *Brenthis dia* was in evidence, but not at all common. Two or three specimens were quite fresh. On August 12th I took a single example of *B. selene* in very good condition, but saw no others. A worn specimen of *Melitaea athalia* was taken on August 28th; of the Satyrines, *Epinephele jurtina*, *E. tithonus*, and *Coenonympha pamphilus* all through August were literally swarming. In the first half of that month *Erebia aethiops* were flying on the rough ground mentioned above, and one or two were seen in the middle of the wood in an open space. *Pararge aegeria* var. *egerides* showed itself, but was decidedly rare. Early in the month some very worn specimens of *Melanargia galatea* were still flying.

In September, *Pararge megera* and *P. maera* were not uncommon, all the latter being of the *adrasta* form. *Pieris brassicae* and *rapae* were common, especially the latter, but *P. napi* was not at all so. *Leucophasia sinapis* flew in the fields and in the sides of the wood, but was by no means common. *Gonepteryx rhamni* was numerous at the end of August, but after the first week of September, which was wet and cold, very few were to be seen; even on bright sunny days the cold weather apparently drove them to hibernation. I have not yet mentioned one butterfly which swarmed in almost incredible numbers all through August, *Lycaena icarus*. On several occasions I saw over one hundred sitting close together on damp spaces, sometimes in a space of less than two square yards, all males. Only once did I see a female in these assemblies. Although I examined them very carefully, I could see no signs of a variety among them. As I have said, the first week of September was cold and wet; and this seemed to have a remarkable effect on the Vanessids, for all through that month I did not see a single specimen of *A. urticae*, *V. io*, or *P. cardui*, less than a dozen *P. atalanta*, and only one *P. e-album*, yet after the first week the days were bright and sunny, though the nights were decidedly cold.

I did no night work during my visit for various reasons, one being that it was impossible to get materials for sugaring, another that I am not now so young or energetic as I once was, so that not very many moths came in my way. A few, however, came into the room to the light through the window, among them a beautifully fresh specimen of *Hadena atriplicis* and another of *Leucania albipuncta*, one *A. pyramidea*, and, of course, many *Neuronia popularis*. In the daytime a single specimen of *Macroglossa stellatarum* in fresh condition was taken, and a few minutes afterwards a very worn-out specimen of *Hemaris tityus* flying about a scabious flower. In the clover-fields, *Euclidia glyphica* and *Strenia clathrata* were common, as was, later on, *Anaitis plagiata*. A few *Acontia luctuosa*, *Acidalia ornata*, and *A. rubiginata* also were seen, as were odd specimens of *Camptogramma bilineata*, *Fidonia atomaria*, and *Cidaria prunata*.

I was much struck by the fact that so few species occurred that are not taken in the British Isles. With regard to that important point in field entomology—the weather—I left cold, dull, and unpleasant conditions in England on July 21st to find splendidly bright hot weather in France, which, except for occasional thunderstorms, lasted up to the very end of August.

Oxford.

January 1921.

BRITISH ICHNEUMONS: ADDITIONS AND CONFIRMATIONS.*

BY CLAUDE MORLEY, F.Z.S..

In my former paper upon this subject, one additional species was placed upon the British list and three others confirmed. Subsequent matter is so scanty that I am beginning to modify the conviction held throughout the course of my study of the "British Ichneumons," that we were as yet no more than "scraping the surface," as Bingham used to say, of the subject; and that perhaps, after all, the 1523 species there described may pretty fully represent our indigenous fauna in this family. Most of the new matter was brought forward by Rev. W. F. Johnson in the "Irish Naturalist," xxix, 1920, p. 19; and this needs no more than passing comment here.

1. *Ichneumon amphibolus* Kriechb.

Kriechb. Ann. Nat. Hofmus. Wien, iii, 1888, p. 26, ♀.

Two ♀ ♀ taken on 17th September at Portnoo, in Donegal, in 1918, and at Poyntzpass, in Arnagh, in 1919, by Johnson. Dr. A. Roman has some notes on the species, whose ♂ is still unknown, in Entom. Tidskr. xxv, 1904, p. 115. In the 1915 British Catalogue it should be entered as No. 106 *a*, next to *Ichneumon analis* Grav.

2. *Phygadeuon fumator* Grav.

Grav. (Ichn. Brit. ii. p. 97), var. *oppositus* Thomson.

Among the very slight variations of *P. fumator*, regarded as forms by Bridgman in his Norwich collection and by me, but erected into species by Thomson (Opusc. Entom. 1884, p. 960, ♀), is *oppositus*, which differs very little from typical *P. fumator* in having the head less cubical, pronotum and metapleuræ smoother, petiolar area parallel-sided, fenestræ of second recurrent nervure punctiform and lower angle of brachial cell nearly rectangular. It is a common form throughout Northern Europe, and Schmiedeknecht has assigned it a ♂ in Opusc. Ichn. ix, 1905, p. 714.

3. *Hemiteles fumipennis* Thoms.

Thoms., l.c. p. 984, ♀.

One at Portnoo, in Donegal, on 17th September, 1918. It differs from the common *H. aestivalis* in its more elongate body, transverse and bicarinate postpetiole, entirely and very finely alutaceous head and mesonotum, distinct epomiaæ, hardly geniculate mandibles, distinct lateral

* Cf. Ent. Mo. Mag. 1916, p. 99.

metathoracic carinae, and lack of substigmatal infumescence on the wings. This is an interesting addition, because the species does not appear to have been noticed since first described from Lund; and the ♂ is still unknown. In our Catalogue it is No. 445a.

4. *Cryptus albatorius* Vill.

Vill. (Ichn. Brit. ii, p. 311), var. *titubator* Thunb.

Var. syn.:—*Ichneumon titubator* Thunberg, Mém. Acad. Sc. Pétersbourg, viii, 1822, p. 270, ♀; *lib. cit.* ix, 1824, p. 336, ♀. *I. armator* Thunb., *l.c.* 1822, p. 264, ♀; *l.c.* 1824, p. 314, ♀ (nec Fab.). *Cryptus infumatus* Thoms., Opusc. Ent. v, 1873, p. 481, ♂ ♀ (nec *C. difficilis* Tschek.); Voll., Pinac. 1875, pl. 6, fig. 7, ♀; Holmgr., Ent. Tidskr. vii, 1886, p. 23; Thoms., *l.c.* xxi, p. 2352, ♂ ♀; Schm., Opusc. Ichn. vi, 1904, p. 457. *C. albatorius*, var. *infumata* Roman, Nat. Unt. Sarek. iv, 3, 1909, p. 265. ♂ ♀; Ent. Tidskr. xxxi, 1910, p. 155. *C. titubator* Rom., Zool. Bidr. fr. Uppsala, i, 1912, pp. 233 and 283, ♀ ♀.

For the type form, which extends "Europa fere toto; Britannia; Africa bor.," Villers's name of 1789 stands; *titubator* Thunb. is a small race, not uncommon with us as it is in Denmark, Sweden, Lapland, and Northern France.

5. *Mesolecius ustulatus* Desv.

Desv. (Ichn. Brit. iv, p. 141).

Hitherto this species has rested upon the unique ♀ in the British Museum. I was delighted to discover its ♂ in a box of *Hymenoptera* recently sent me by Prof. J. W. Carr for determination. From my description, *l.c.*, the ♂ differs in having the mouth, clypeus, whole face, antennae except above, radices, radical callosities, tegulae, and whole legs flavous; the claws are very large and not strongly curved; and the antennae peculiarly elongate (12 mm. in length to the 11 of the body), stout and filiform to the sixth subapical joint, which is excised and reflexed in a remarkable manner. It was taken at Martin Beck, near Bawtry, in Notts, on June 19th, 1920, unfortunately by general sweeping, and is in the Nottingham University Museum.

6. *Stenomacrus reptilis* Marshall.

Orthocentrus reptilis Marsh., Ent. Mo. Mag. xiii, 1877, p. 242. ♀.

Not noticed in literature since two mutilated ♀ ♀ were first brought forward from Loom Bay, in Spitsbergen, found on July 31st, 1873.

On September 19th, 1920, I was so fortunate as to turn up a third

♀ at the roots of the numerous plants of *Glaucium flavum* growing among *Ammophila* (*Psamma*) *arundinacea* on the blowing-sand at Benaere on the Suffolk coast. The insect was extremely active, though its wings are only in the same rudimentary condition as Marshall's more macropterous example, where they do not extend to the hind coxae; hence I think for his "*alae abdomine multo breviores*" we ought to read *thorace*. An examination of the entire antennal, capital, and abdominal structure readily shows it to be a *Stenomacrus*, very closely allied to *S. cubiceps* Thoms., which has occurred to me on the coast, both of Suffolk and West Ireland (as well as inland), like which the head is posteriorly broad, eyes prominent, metathorax elongate, and the thyridii peculiarly large.

If it proves to be more than a brachypterous form of that species, this addition to our fauna must be placed next it, No. 910 *a* in Cat. Brit.

7. *Euryproctus buccatus* Holmgr.

Mesoleius buccatus Holmgr., Sv. Ak. Handl. 1855, p. 145, ♂ ♀.

Syndipnus (*Hypamblys*) *buccatus* Thoms., Opusc. Ent. xix, 1895, p. 2008.

Mesoleius buccatus Strobl, Mitt. Nat. Ver. Steiermark, xxxix, 1902, p. 27, ♂.

Hypamblys buccatus Schm., Opusc. Ichn. xxxv, 1913, p. 2790, ♂ ♀.

A rare species, occurring in Styria, Central and Southern Sweden; Johnson took a female during May in Armagh. In our Catalogue it comes next to *E. albopictus*, No. 1086 *a*.

8. *Canidiella trochantella* Thoms.

Thoms. (Ichn. Brit. v, p. 127).*

The male of this uncommon species is hitherto undescribed; it differs from the ♀ in nothing but having the posterior tibiae entirely dull stramineous at their centre, and not only externally so. I have seen it from Southwell, in Nottingham, taken on August 15th, 1918.

* I have at length succeeded in clearing up the mystery of that "Var. ♂," of *Spirolia* (which genus, I fear, must fall thus:—*Deuterospiolia*, Dalla Torre, Cat. Hym. 1901, p. 678 = *Spirolia* Först. Verh. p. Rheinl. xxv, 1868, p. 173; nec Dahl, 1854 = *Allocota* Roman, Zool. Bidr. fr. Uppsala, i, 1912, p. 285; nec Först.) *maculipennis* described in Ichn. Brit. ii, p. 114. There I expressed the probability of it being a hyperparasitic Ophionid mimic, which is certainly correct, since I have been enabled to determine it definitely to be *Cremastus* (= *Cremastidea* Viereck, Proc. U.S. Nat. Mus. xliii, 1912, p. 557 = *Paurolexis* Cameron, Journ. Bombay Nat. Hist. Soc. xvii, 1906, p. 282) *oculatus* Szepi-gei, Term. Fuz. xxiii, 1900, p. 21, ♂, with which *C. caudatus* Szépl., l.c. p. 22, ♀, has been correctly synonymised by Schm., Opusc. Ichn. 1910, p. 2031. It is interesting to note that the two ♂♂ described by me on May 9th, 1900, bred from *Psyche tenella* Spey., var. *zernattensis*, were taken at Locarno, since Szepi-gei found both his sexes in Hungary, and the species has not been noticed later. Dr. Chapman also had sent, on June 2nd, 1899, two ♀♀ and one ♂ from the same host and (?) locality.

9. *Angitia parvicauda* Thoms., ♂ ♀.

Angitia parvicauda Thoms. Opusc. Entom. xi, 1887, p. 1163. ♀.

Diocetes parvicauda Schm. Opusc. Ichn. xxi, 1909, p. 1644, ♂ (sic).

A small, black, and somewhat elongate species, with the legs, except basally, all pale red and terebra arcuate, not longer than half abdomen. Head with the somewhat stout mandibles and the palpi pale. Antennal scape beneath and abdominal plica stramineous; terebra double the length of the quadrate postpetiole. Legs flavidous: front coxae and base of the intermediate black, with the anterior trochanters stramineous and the hind ones nigrescent. Wings with the areolet higher than broad, but frequently wanting.

Length, 4 mm. ♂ ♀.

Distinct in its nearly square postpetiole and, in ♀, in its semilunately curved terebra, lending it somewhat the facies of *A. vestigialis* Ratz., than which it is smaller with the thorax gibbulous, etc. Of our British species it is most closely allied to *A. interrupta* Hlgr. in the apically acute discoidal cell and (when present) shape of the areolet; but it is much more slender, with a length of 4 mm. against the latter's 5, and instantly distinguished by the curved apical radial abscissa and totally red hind tibiae. The areolet is very often wanting; and the hitherto unknown ♂ differs only sexually.

Thomson brought forward the ♀ from Pâlsjö in Sweden over thirty years ago, and I find it nowhere since referred to. In the British catalogue it stands as No. 1382a; in Ichn. Brit. v, 1914, p. 203, it is No. 32a of its genus.

I believe we owe the introduction of this species into our fauna to a very interesting natural phenomenon. I had collected around Southwold on the Suffolk coast, sometimes with E. A. Elliott, Horace Donisthorpe, Campbell-Taylor, etc., annually from 1896 to 1906 (exhaustively so from 1st July to 2nd October in 1900), paying particular attention to *Ichneumonidae*, without seeing a trace of this species. In the year or one of the years immediately preceding 1907, the sea, at the Buss Creek there, broke through its retaining wall and covered a low-lying salt-marsh with shingle, whose area was about five acres. Through this shingle in 1907 nothing but such truly maritime plants as *Arundo* and *Psamma* were able to sprout. From 2nd to 16th September, 1907, I found these plants literally crowned with a vast congregation of insects, many of which I had never before seen in the country, e.g. the fine Ortalid Dipteron, *Anacampta urticae* Linn. During this period *Angitia parvicauda* first appeared, and that in great plenty, on 3, 4, 6, 7, 10, 11, and 14th; both sexes occurred on the above reeds in company but not, I think, in cop., the ♂♂ being rather more than one-fifth the rarer sex; one specimen only occurred on reeds elsewhere, at Easton Broad on the same coast one and a half miles

farther north. No more were noticed till September 2nd, 1910, when a female occurred at Southwold; but on September 7th, 1911, the species was again common, this time entirely upon marram grass at Easton Broad with six-sevenths of the individuals of the male sex. I last saw a single ♂ on reeds, yet another mile further north and still on the coast in Covehithe Broad, on September 10th, 1912; and none have subsequently occurred, though annually looked for, since that time. That the eruption of shingle at Buss Creek should synchronise with the species' first appearance may be accidental, but is remarkable; and it appears obvious that there was a steady tendency to northern expansion, possibly checked southward by the presence of the town: in its actual direction are nothing but intervening bluffs crowded with heaths. The first step in the problem's elucidation would be the discovery of this parasite's host; and this I can suggest. The smaller Campoplegid genera, whereof *Angitia* is one, are nearly confined in their parasitism to the smaller Sawflies and Microlepidoptera; of the latter nothing unusual occurred here, of the former the three most probable species were *Pachynematus flaviventris* Htg., *P. trisignatus* Fst., and *Pteronus curtispinis* Thoms. The two former have always occurred on the Arundines and Psammac here, so may perhaps be neglected; but the last here turned up for the first time on September 4th, 1907. I feel confident that one of the three was the host of this new British Ichneumon, none of my fifty specimens of which has the scape at all pale.

Monks' Soham House.

November 20th, 1920.

ON *NABIS LATIVENTRIS* BOH. (HEMIPTERA-HETEROPTERA).

BY E. A. BUTLER, B.A., B.SC., F.E.S.

There are many points in the natural history of this Hemipteron which are of great interest, and some also that still need elucidation. The object of this paper is to detail what is already known, and to indicate something of the problems that are still unsolved, in the hope that Hemipterists may take such opportunities as come in their way of studying the species, and so of completing our knowledge of its bionomics.

The adult ♀, like those of the rest of the genus, is furnished with an ovipositor which consists in the main of four saw-like parts sliding upon one another, something like those of saw-flies; each "saw" is strongly serrate at the apex for a distance of about $\frac{2}{3}$ mm., and the

whole set combine into a single dagger-like weapon, something like a Malayan kris; a structure like this would by itself be strong evidence that, notwithstanding the carnivorous habits of the adult, the eggs are laid in the tissues of plants. Amyot and Serville refer to what purports, under the name of *Cimex subapterus*, to be a description from De Geer's "Mémoires pour servir, etc." of the eggs of this species. This description, however, does not apply to our present subject, but to what is now known as *Coranus subapterus*, an entirely different insect. Dr. T. A. Chapman seems to have been the first to discover the eggs, and he found them imbedded in the stems of *Chlora perfoliata* (Entomologist, 1906, p. 73). Some fourteen years ago he saw growing on the Downs in Surrey, stems of *Chlora* which showed, at the beginning of July, a number of slightly raised circular marks, about 0.21 to 0.24 mm. in diameter. They were placed in a straight line down one side of the stem, usually in its second or third internode, and about 2 mm. apart. They were found to be the ends of eggs which passed at right angles through the hard outer layers of the stem and then bent down through the central pith so that the main part of the egg was parallel to the length of the stem. The time of oviposition is not known, but it would apparently be in spring-time, when the *Chlora*-stems would be comparatively soft. But, be that as it may, it is not easy to understand how an ovipositor with a wavy blade such as described above can be used so as to produce such a perfectly circular and smooth hole. Hungerford (Univ. Kansas Sc. Bull. Dec. 1919) has described a similar arrangement of the eggs of *Mesorelia mulsanti* White in the stems of water plants, and states that the ♀, rocking the body slightly from side to side, causes the entire drill (which in this case is spear-shaped) "to rotate or twist back and forth on its axis, rapidly at times, or again more slowly as may suit the necessity of the work, until a hole is effected and the ovipositor is buried to its base." If such a method is applicable in our present case, the movement must be more complicated because of the difference in the shape of the borer. The egg apparently becomes enlarged after deposition, as the opening in the stem exactly fits it at its smallest diameter, and the part imbedded is much broader. The egg has a smooth, tough skin, and is of a pale yellowish colour. It is closed by a kind of stopper which is pushed out when hatching takes place, though it still remains attached to the egg by several twisted fibres and in a position as if its being pushed back into its place were contemplated.

In August 1918 I found on the Chiltern Hills in S. E. Oxfordshire a somewhat different arrangement of eggs, which, nevertheless, I think

must belong to the same species. The *Chlora* stems here were older, apparently in their second year of growth, the plant being a biennial; the ends of the eggs were not circular but a very much compressed oval, as if they had been subjected to strong lateral pressure, so that they became parallel-sided; and each was at the bottom of a slight depression caused by the longitudinal splitting of the outer layers of the stem. The parts imbedded corresponded to those in Dr. Chapman's specimens, which he has been good enough to transfer to my collection. These eggs unfortunately did not hatch, and may, indeed, have been dead when I found them, possibly killed by the pressure which had altered their shape.

Of course many questions arise here, such as the cause of the difference in the two cases, the time of oviposition in the latter instance, whether during the first or the second year of the life of the plant, the source of the assumed lateral pressure, etc. As to the purpose of the enclosure of the eggs in the stem of the plant, the only suggestions that I know of make it depend upon the mere mechanical properties of the plant, which would protect them from damage and would prevent them from drying up. One must not forget, however, the apparent egg-growth, in which case absorption of the fluids of the plants must take place. As the insect is much commoner than the plant, as well as much more widely distributed, it is evident that, if enclosure is always necessary, other plants besides *Chlora* must be used for the purpose.

The larva as it issues from the egg is not unlike a little ant, about 1.75 mm. in length; here is a description of a specimen just under 2 mm. long, and therefore probably in the fully-grown form of the first instar:—Narrow and parallel-sided, pale chocolate-brown, sparsely set with long, fine hairs; head large, conical, and with a hindwardly arched sulcation from eye to eye, the area in front of it being rugose; eyes not prominent, ocelli none; thorax with a pale line down the middle; pronotum rather longer than head, straight in front, rounded behind, and with pale foliaceous lateral margins; mesonotum with lateral margin produced in the middle of each side into a strong, upwardly directed spine; metanotum with a similar spine directed vertically and placed on a level with the hind margin, instead of medially; the first two abdominal segments with a somewhat foliaceous broad white border, a central blunt tubercle close to the hind margin of the first segment, and a very slight trace of a similar one on the second; hind margin of second segment pale, remaining segments very convex dorsally; antennae four-jointed, stout, terminal joint thickest and longest, and constricted

in the middle; femora reddish; first two pairs of tibiae pale yellowish, hind pair dark reddish-brown in the middle, becoming paler at base and apex; tarsi two-jointed, basal joint very small, brownish, second joint long and pale with apex fuscous; claws long, brownish at base, becoming pale outwardly; fore femora very stout, and carrying beneath a row of six or seven stout setae, placed rather far apart; rostrum stout, extending to intermediate coxae.

In being furnished with spines on the middle of the body, and also with pale foliaceous margins at the same parts, this larva is unique in the genus *Nabis*, and what is still more remarkable, these organs and markings entirely disappear in the adult insect; no other British *Nabis* has any spines at all, either as larva or as adult, nor has any other species those distinct white markings which seem, as it were, to narrow it at the waist. Here, then, is a whole set of apparatus, which is purely temporary in character, and is destined to be entirely discarded when the insect attains maturity; the problem is, therefore, to find a valid reason both for their presence at all, and on this species alone. Of course these spines add somewhat to the ant-like appearance of the larva, but that by itself does not bring us much nearer to an explanation, and we need to find out what advantage it is to the young larva, if any, that it should be myrmeciform; we will recur to this question presently.

The structure of the tarsi, on the other hand, is characteristic not only of the whole genus in the larval form, but equally so of the *Reduviidae*, *Anthocoridae*, and *Saldidae*. In the adult in all these, the long terminal joint becomes divided nearly equally, making the tarsi, after the last moult, trimerous. The rostrum is characteristic of a predaceous insect, not being enclosed between bucculae, but being strongly curved and meeting the body at the apex only; thus it has complete freedom of motion, and can be thrust forward to reach prey in front of it.

A later instar, measuring not quite 4 mm. in length, is similar to the above, but darker, and with the long hairs much stouter and the antennae proportionately more slender; hind tibiae strongly fringed inwardly; white foliaceous expansions at base of abdomen broader and more distinct.

The last instar measures 6 mm. Head similar in shape to that of adult, but eyes not quite so prominent, and still no ocelli, though there are faint indications of the spots at which these will appear; surface between eyes distinctly shagreened, the other parts more faintly so. Colour of fore-parts deep chocolate-brown; pronotum trapezoidal, very

globose above, but with a deep furrow on each side just before the humeral angles, margin behind the furrow cream-coloured, wing-pads and scutellum together considerably broader than pronotum, brown with outer angles of wing-pads yellowish; metanotum with a blunt spine in the middle, yellowish, with a transverse brown fascia enclosing the spine, and a median reddish streak in front; first abdominal segment brown in the centre with two obsolete prominences, and cream-coloured at the sides, which are broad and foliaceous; this is continued as the cream-coloured connexivum, gradually narrowing to the sixth abdominal segment, when it disappears; abdomen dark blackish-brown and shiny, very convex above, rising far above the first segment, which lies in a hollow; underside brown, with three basal abdominal segments broadly margined behind with cream-colour; legs brown, with first two pairs of tibiae paler; front femora beneath with stout, dark spinous hairs, mainly in two rows, these being replaced in the adult by a large number of closely-set, fine, white silky hairs; second pair with similar but shorter sharp spines, which are replaced in the adult by thickly-set dark hairs, stouter than those on the front femora; hind pair simple; tibiae hairy, but with the hairs on the inner side much finer than in the adult; tarsi with the usual very short basal joint and long terminal one; basal joint of antennae not so stout as in the adult; body set with a few long, scattered clavate hairs. In some specimens, the parts that are usually cream-coloured take on more or less of a red tint.

(To be continued.)

ON *PHYSTOTHRIPS LATUS* BAGN., AND SOME ALLIED SPECIES.

BY RICHARD S. BAGNALL, F.R.S.E., F.L.S.

There is very little doubt that the *Phystothrips ulmifoliorum* of European authors is not the same species as the *ulmifoliorum* of Haliday.

The common species of the elm is the one I have described under the name of *Scirtothrips ulmi*, and as the larva of my species fits in with Haliday's description of the larva of his *Thrips ulmifoliorum*, there is little doubt in my mind that *S. ulmi* should be referred to *ulmifoliorum*.

This being granted, the *ulmifoliorum* of Uzel and later authors is most probably *consociata* Targ.-Tozz. At any rate, it is known in this country, widely spread, and found on many kinds of trees, though rare.

Williams (*Entomologist*, xlix, 1916, p. 280), in recording both sexes of *Physothrips latus* Bagn., remarks that the species is not so small as the measurement given by me, being quite as large as *P. ulmi-foliorum* (Uzel *nec* Haliday). I have an example of the species that Williams evidently had in front of him; it is a much larger and stouter insect than the true *P. latus*, and I have ventured to describe it under the name *propinquus*.

The "*consociata*" group may be divided into two main groups—the one with post-ocular bristles (containing *latus* and *propinquus*) and the other without. It probably includes a large number of species, and in addition to *P. propinquus*, I also describe *P. navasi* and *P. hispanicus* taken by my good friend, Father Longinos Navas, to whom I find particular pleasure in dedicating one of them.

The types of the species described herein are in my collection.

STYLE (7+8) OF ANTENNAE LONG, ONE-HALF AS LONG AS JOINT 6, WITH 8 DISTINCTLY LONGER THAN 7.

a. Post-ocular bristles present, chaetotaxy of fore wing and 8th abdominal tergite as in next group, b (aa).

Physothrips propinquus, sp. n.

♀. Length about 1.1 mm.

Dull yellow, thorax and body very lightly touched with grey or light grey-brown, last two abdominal segments brown. Antennal joints 1 and 3 pale, 2 and 4 light grey-brown, 5 to 8 grey-brown, 5 paler basally. Wings yellowish-grey. Cephalic and pronotal setae as in *P. latus* Bagn., but longer and stronger.

Relative lengths of antennal joints 3 to 6 and style (7+8) approximately: 44 : 36 : 34 : 46 : 24 as compared with 38 : 28 : 26 : 36 : 20 in *latus*. Setae of lower vein in fore wing numbering eleven (9 in *latus*), longer than in *latus* (7 to 8 as compared with 5) and set at intervals less than the length of the bristles, whereas in *latus* these bristles are shorter and set at intervals greater than the length of the bristles. Hind margin of 8th abdominal tergite with a longish irregular "comb." Bristles of 9 and 10 dark, long and strong.

Hab. Oxford, on *Pinus*, viii.1914.

This is apparently the *P. latus* of Williams (*nec* Bagnall), and is abundantly distinct in the larger size, the stronger and stouter chaetotaxy, and, especially, the chaetotaxy of the fore wings. It is more deeply coloured than *P. latus*.

Physothrips latus Bagn.

The above notes will serve to distinguish this minute pallid insect which is as yet only known from the original Northumbrian example.

b. *Post-ocular bristles absent.*

- aa. *Fore wing with 2 setae in the distal half of upper vein near tip; hind margin of 8th abdominal tergite fringed; inter-ocellar bristles situated between the posterior pair of ocelli.*

Physothrips consociata (Targ.-Tozz.) = *P. ulmifoliorum* of Uzel
nec Haliday. All available material requires close study.

- bb. *Fore wing with 3 setae in the distal half of upper vein; hind margin of 8th abdominal tergite not fringed; inter-ocellar bristles situated immediately above each posterior ocellus.*

Physothrips hispanicus, sp. n.

♀. Length about 1.1 mm.

Head and abdomen dark grey-brown, the latter darkest posteriorly; pterothorax orange-yellow shaded with grey, and pronotum of a lighter yellow. Legs pale yellow lightly touched with grey, especially the femora in their outer margins; wings greyish. Antennal joint 1 yellowish-grey; 2, distal half of 6, and style grey-brown; 3 pale yellowish white; 4, 5, and basal half of 6 pale yellow; 4 and 5 shaded with light grey at apices.

Head transverse about 1.4 times as wide as long; dorsal surface posteriorly coarsely and irregularly transversely striate; eyes large, occupying 0.6 the total dorsal length of head; coarsely faceted; ocelli large, the posterior pair above a line drawn across the hind margins of the eyes, the inter-ocellar setae situated immediately above each posterior ocellus, moderately long and stoutish. Minor setae on a wavy line drawn across the posterior margins and two pairs of longer setae between eyes, the outer pair touching the inner margin of eyes at each side of, and the inner inner pair just above, the anterior ocellus. Antennae nearly twice as long as the head, intermediate joints short and stout; relative lengths of joints 3-6 and style (7+8) approximately as follows:—32 : 30 : 28 : 39 : 19.

Pronotum 1.2 times as wide as long and 1.4 times as long as the head; setae at hind angles approximately subequal, the inner pair not noticeably longer than the outer, about 0.3 the length of the pronotum; the median pair of the postero-marginal series nearly 0.5 the length of those at posterior angles. Pterothorax stout; setae of fore wings long, 8 or 9 on hind vein, very distinctly longer than the spaces separating them; 3 on distal half of upper vein, one near middle and two at tip.

Abdomen elongate-ovate; posterior margin of 8th tergite simple, except minute indications of comb at each side. Terminal bristles stout and long, those on 10 about 0.8 the length of those on 9 and not so stout.

♂. About 0.9 mm. More slender than the female. Prothorax and pterothorax wholly suffused with grey-brown, though the orange-yellow basis is distinctly seen in the pterothorax. The 2nd antennal joint light yellow-grey, joints 6 and style shorter than in female; relative lengths of joints 3-6 and style (7+8) approximately as follows:—31 : 30 : 27 : 34 : 16.

Tergite 8 with a series of 4 long approximately equidistant dorsal bristles in a straight line, the inner pair being 1.5 times longer than the outer.

The coloration of the ♀ in this species recalls *P. discolor* Karny, a species that falls in the section wherein the antennal style is short and stout.

Hab. SPAIN, Arnes (Tarragona), August 1912 (*Navas*), both sexes.

Physothrips navasi, sp. n.

♀. Length about 1.0 mm.

Entirely yellow, abdomen and legs paler than head and thorax, fore part of head brownish-yellow, last abdominal segments distally lightly shaded with grey-brown and a postero-median patch of light grey-brown on segments 4 to 7. Wings pale greyish-yellow. Antennae with joint 1 pale, 2 yellowish-brown, 3 and 4 pale, 4 lightly shaded with grey-brown distally; 5 light grey-brown, pale at base; 6, 7, and 8 grey-brown.

Form much as in *hispanicus*; inter-ocular bristles moderately long, placed as in *hispanicus*. Antennae twice as long as the head; relative lengths of joints 3 to 6 and style (7+8) approximately as follows:—31 (with stem): 30: 27: 36: 18. Pronotal setae at posterior angles short and stout; the outer markedly shorter than the inner, about 2: 3½. Fore wing with 9 setae in the lower vein, long, those distally longer and more distant. 3 in distal half of upper vein, one near middle and the second nearer to the distal seta than to the first; distal seta much longer and stronger than the other two.

Apical abdominal bristles moderately long; those on 10 about 0.85 the length of 9 and not so stout. Posterior margins of tergite 8 without fringe.

♂. Length about 0.8 mm. Tergite 8 with a series of 4 long bristles as in *hispanicus*, but with the inner pair shorter than the outer.

Separated from *hispanicus* by the colour, the chaetotaxy of the pronotum, and the specialized series of bristles on tergite 8 in the male.

Hab. SPAIN, Arnes (Tarragona), August 1912 (*Navas*), both sexes.

Rydal Mount, Blaydon-on-Tyne.

January 28th, 1921.

Gyrinus urinator Ill. and *G. bicolor* Pk., near Cambridge.—On December 28th, 1920, I obtained a *Gyrinus* by casually sweeping the Vicar's Brook, near Cambridge; this on examination proved to be *G. urinator* Ill. Mr. Balfour Browne, to whom my thanks are due for the identification of this and the following species, writes: "*G. urinator* has been recorded for Northumberland, S.; Yorkshire, N.E.; on the East Coast; otherwise all records in England are for the southern counties, except Hereford." *Gyrinus bicolor* Pk. is quite common at Quy Fen, near Cambridge. I took three specimens there on January 4th, three others in April last. I am not aware that this species has been recorded for Cambridgeshire before.—E. J. PEARCE, The Lodge, Corpus Christi College, Cambridge: February 1st, 1921.

A "trap" for sap-frequenting beetles.—During the last season I have found a beetroot, preferably rather rotten, most efficacious as a bait for beetles, especially for *Epuraea* and kindred genera. This may be well known, but a list of the species taken may be of interest: *Epuraea diffusa* and *deleta*, *Soronia punctatissima* and *grisea*, *Cryptarpha imperialis*, *Ips quadripunctata*, *Rhizophagus parallelus* and *perforatus*.—G. H. ASHE, Hartlebury: February 1921.

Aculeate Hymenoptera in East Cheshire in 1920.—Among *Hymenoptera* captured here during the past season, the following are perhaps of interest, the district not being a well worked one so far as this order is concerned:—*Crabro nigrita* Lep. (♀), *Sphcodes hyalinatus* Schk. (not uncommon), *Halictus freygessneri* Alf. (abundant), *H. rufitarsis* Zett., *Andrena angustior* Kirb., *A. fucata* Sm. (abundant), *A. lapponica* Zett. (abundant, gathering much pollen from *Rhododendron* as well as from the usual *Vaccinium*), *A. helvola* L., *A. coitana* Kirb. (abundant), *A. tarsata* Nyl., *A. subopaca* Nyl., *Nomada obtusifrons* Nyl. (common), *N. lathburiana* Kirb. (common), and *Bombus lapponicus* F. I am indebted to the Rev. F. D. Morice for confirmation of several of the above.—FERRIS NEAVE, The Clough, Rainow, Macclesfield: February 6th, 1921.

Pairing of Bombus terrestris in New Zealand.—On November 15th (equivalent to May 15th in Britain) I observed two specimens of *Bombus terrestris* flying together, apparently in copulâ. One was unquestionably a large female, the other was considerably smaller and presumably the male. Having no net with me I could not capture the insects, which speedily passed out of sight, but I am satisfied that the facts are as stated. I had always understood that the females of *Bombus* were impregnated in the autumn, but have never before seen the insects actually pairing.—G. V. HUDSON, Hillview, Karori, Wellington, New Zealand: December 20th, 1920.

Reviews.

1. "KÄFER AUS DER FAMILIE TENEBRIONIDAE GESAMMELT AUF DER 'HAMBURGER DEUTSCH-SÜDWEST AFRIKANISCHEN STUDIENREISE 1911.'" Abhandl. Auslandsk. Hamburg. Univ., Bd. 5, Reihe C. Naturwiss., Bd. 2, 1920. By HANS GEBIEN. (2 Plates.)

2. "RÉSULTATS DE L'EXPÉD. SCIENT. NÉERLANDAISE À LA NOUVELLE GUINÉE," Vol. xiii. Zool. Livr. 3, 1920. Coleoptera. Fam. Tenebrionidae. By HANS GEBIEN. (3 Plates.)

Each of these works, as indicated by the titles, is founded upon the material collected by a scientific expedition, but with this has been combined all other material available during the war, so that each forms a valuable regional monograph of the Coleopterous family Tenebrionidae. Not only are the new species described, many of them being illustrated by detail-figures in the text as well as by the plates, but the already known species from the region under consideration are also listed, in many cases with the addition of more precise descriptions, and their interrelations are given by means of a key to the genus. In some cases these keys are limited to those species of the genus inhabiting the region dealt with, but in others the key treats of the genus as a whole. The introductory sections examine the relation of the local fauna to that of the wider areas involved and are full of valuable hints for the student of the geographical distribution of the family. The Plates are from photographs of Museum specimens, usually under a low magnification, and, particularly in the second volume named, are remarkable for the clearness of detail shown.—K. G. B.

"THE BIOLOGY AND ECOLOGY OF AQUATIC AND SEMI-AQUATIC HEMIPTERA, AND THE MALE GENITALIA AS CHARACTERS OF SPECIFIC VALUE IN CERTAIN CRYPTOCERATA." By H. B. HUNGERFORD. Kansas University Science Bulletin, December 1919.

Though this publication bears date December 1919, it has only quite recently come into our hands. Let us say at once that we heartily welcome it as a most interesting and useful compendium, not only for Americans, but for Hemipterists of the Old World as well, for the genera of these bugs are pretty much the same in both hemispheres. Three distinct types of country with varying water conditions were investigated and are here passed in review—East Kansas with its muddy pools, West Kansas with its sluggish and intermittent streams, "slender threads of silver wending their way through wide strips of sand, margined by shallow banks," and the central part of New York State, where, especially in the neighbourhood of Ithaca, one meets with "a wealth of water types," from the "rushing, tumbling waters of the brook to the dark, acid, sluggish streams of the upland bog: from spring-fed pools to lake conditions." The families described are the *Saldidae*, *Ochteridae*, and *Gelastocoridae* (*Polygonidae* and *Mononychidae*), *Hebridae*, *Veliidae*, *Mesovelidae*, *Hydrometridae*, *Gerridae*, and the various families of the *Cryptocerata*. Full descriptions of the various species are given, and biological notes are added wherever possible, while life-histories, more or less complete, are described of at least one species in each of the principal genera. Of these the most welcome, as supplying the greatest amount of new matter, are those of *Salda*, *Hebrus*, and *Plea*; the eggs of the *Salda* were found beneath the sheaths of shore-grasses, those of the *Hebrus* between the leaves of *Sphagnum*, and those of the *Plea* in the tissues of *Elodea* and *Chara*. Three excellent coloured plates are included and 32 plain ones, the latter containing photographs of the habitats of some species and sketches of eggs, larvae, and adults, anatomical details, etc. The author calls attention to the importance of the various species of Entomostraca, and especially of Ostracoda, as food for many of these insects; on the other hand, he contends that the *Corixidae* are largely vegetarians, subsisting upon small Algae such as *Spirogyra*, *Desmids*, etc., which they sweep up to the mouth by means of their "palae." The oviposition of *Mesovelis* is well described, and is seen to be of the same character as Dr. Chapman has shown that of *Nabis lativentris* to be. Particulars are given of the conveyance of the eggs of *Halobates* from place to place on the feathers of sea-birds. Mr. Hungerford has made a study of the genitalia in the genus *Notonecta*, and hopes, contrary to Kirkaldy's expectations, to be able to make use of them for purposes of specific determination. A good bibliography is appended. There are a few typographical errors, especially in the German quotations, and the descriptions of plates 27 and 28 are transposed.—E. A. B.

Obituary.

Herbert Henry Corbett.—Entomologists, and the Yorkshire Naturalists' Union in particular, have sustained a severe loss in the death of Dr. H. H. Corbett, of Doncaster, which occurred, following an operation on January 5th last, in his 65th year. So recently as December 4th he had been elected to the Presidential Chair of the Yorkshire Naturalists' Union, which had given

him the greatest satisfaction, as he afterwards confessed it was an honour which he had for many years been hoping to attain at some time. The election was immensely popular with all sections of the Union, as his long and successful work, with the genial humour of his personality, had gained for him the highest respect and esteem of the members.

Most of the earlier part of his life was spent in Lancashire, but he removed to Doncaster in 1889, where he settled down for the remainder of his career. His influence in the scientific and literary life of the town made itself felt at once, and he soon became its leading spirit, the establishment of its now good and useful Municipal Museum eventually resulting through his agency. He also at once put new life and vigour into the local Natural History and Scientific Society, in which he and his wife during the whole of their lives there took the greatest active interest. Mrs. Corbett was a daughter of the late Mr. S. J. Capper, the noted Liverpool Lepidopterist, and the Corbetts became truly a naturalist family. Mrs. Corbett was almost as keen on scientific work as was her husband: she went on collecting excursions with him, and assisted him in every possible way. Her death some three years ago, followed by that of their only son, Captain H. Vincent Corbett, who was killed in the war later in the same year, was naturally a terrible blow to him. Captain Corbett had already become a very promising Coleopterist and Hemipterist, and we believe one of his sisters also takes great interest in Entomology. Dr. Corbett was at first interested in the Lepidoptera, especially in the Micros, in which he did most excellent work, adding *Lithocolletis cerasicolella*, H.-S., to the British List from Doncaster captures in 1893; whilst his additions to the List of Yorkshire Lepidoptera were extensive, notwithstanding that he resided in the same district which that keen Microlepidopterist, the late Mr. William Warren, had previously worked for many years. Mr. Warren had contributed largely to the first edition of the List of Yorkshire Lepidoptera in the Doncaster species, but later, as will be seen from the Supplement to the List, Dr. Corbett was relatively not behind him. Later Dr. Corbett became fascinated with the *Coleoptera* in which he also did much valuable work, and along with that order he gained a good knowledge of the *Hymenoptera* and *Neuroptera* of his district, as a reference to these orders in the "Victoria History of Yorkshire," and his notes in the Natural History journals testify.

He regularly attended the excursions of the Yorkshire Naturalists' Union, when he was always an enthusiastic collector; and he rarely missed a meeting of the Entomological Section of the Union, being present in excellent form at the last one on October 30th. He had been both its Secretary and its President. He was a Fellow of the Linnean and Entomological Societies of London, and occasionally attended the meetings of both.

The funeral took place at Doncaster Cemetery on January 8th, the impressive service being conducted by Archdeacon Sandford, and where the various Societies with which he had been connected were represented by many of his friends. Our sincerest sympathy is with the three daughters who have so rapidly been bereaved of both parents and brother.—G. T. P.

John William Carter.—By the death of Mr. J. W. Carter, at the age of 67, which took place on December 15th, Yorkshire has lost another enthusiastic Entomologist. Born at Bradley, near Huddersfield, he, with his

father's family removed to Bradford in 1875, and there the remainder of his life was spent. Soon after taking up his residence there he, with Mr. John Firth and one or two other friends, established the Bradford Naturalists' Society, and from its establishment until his death, Carter was always its leading spirit. He was its first Secretary and afterwards its President, and at the time of his death was again President-elect. He took almost as much interest in the Yorkshire Naturalists' Union, of which he and the writer of this were the oldest members. He frequently attended its excursions and Committee Meetings, and was rarely absent at the Annual Meetings of its Entomological Section, of which he had been President. He was present at the Annual Meeting of the Union so lately as December 6th last, when he exhibited a fine and almost complete collection of the British wasps. His first natural history work was in the *Macro-lepidoptera*, in which he always took a keen interest, and he supplied considerable information for the writer's "List of Yorkshire *Lepidoptera*." Later he took up the *Coleoptera*, and it was in this order that some of his best work was done. The *Hymenoptera*, *Neuroptera*, and *Orthoptera* of Yorkshire also claimed his attention, the "Victoria History of Yorkshire" being indebted to him for numerous records. Many of his records and notes, too, appeared in the various Natural History journals, including this Magazine. For twenty years also he conducted a natural history column in the local newspaper, "The Bradford Weekly Telegraph."

He had been a Fellow of the Entomological Society of London since 1900. Of a quiet and retiring disposition he made no push in the entomological world, but it was a positive pleasure to him to assist beginners in every way he could, and to rejoice in their after success. He possessed, indeed, the respect and esteem of every naturalist with whom he came in contact.

His funeral was on December 20th at Heaton Cemetery, Bradford.
—G. T. P.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
November 25th, 1920.—Mr. K. G. BLAIR, B.A., President, in the Chair.

Mr. G. D. Morison, 100 Fielding Road, W. 4; Mr. D. Watson, 12 Park Place, Gravesend; Mr. G. W. Young, F.G.S., 20 Grange Road, Barnes; Mr. W. West, 29 Cranfield Road, Brockley; Mr. F. H. and Mr. H. M. Simms, The Forlands, Stourbridge, were elected members.

A short series of *Leptomeris* (*Acidalia*) *immorata* and of *Ino* (*Rhagades*) *globulariae* from Sussex were presented to the Society's collection by Mr. F. G. S. Bramwell, of Brighton, and were exhibited.

Annual Exhibition.—Lord Rothschild exhibited the series of 1277 specimens of *Abraaxas grossulariata* L. from the British collection of the Tring Museum; they consisted of the series from the Bright and Gibb collection, and those collected by himself; the larger number of the more extreme varieties have been bred by the Rev. Gilbert Raynor. Mr. C. H. Williams a drawer of varieties of the same species. Mr. H. J. Turner, a large number of extra-European forms of well-known species or species closely allied to them in the European area. Mr. Leeds, long series of aberrations of British

Butterflies taken in 1920. Mr. W. G. Sheldon, his series of about 1400 specimens of *Peronea cristana*, including examples of all the 72 named forms and the type specimens of 39 of them; he also showed about 250 examples of *Leptogramma literana* and its numerous forms. Mr. Percy M. Bright, a long series of *Epinephele tilthonus* aberrations, including a white suffused form and a gynandromorph, and of *Argynnis aglaia*, including several magnificent melanic forms, and a scaleless aberration with perfect fringes. Mr. B. W. Adkin, a series of aberrations of *Satyrus semele*. Mr. T. H. Grosvenor, series of British species which occur in India, including *Papilio machaon*, *Pieris brassicae*, *P. rapae*, *Gonepteryx rhamni*, *Colias hyale*, *Apatura iris*, *Pyrameis cardui*, *Polyommatus icarus*, *Arícia medon*, *Rumicia phlaeas*, etc. Mr. Pickett, series of aberrations of *Agriades coridon* taken in 1918, 1919, and 1920. Mr. L. W. Newman, aberrations shown in the different British races of *Melitaea aurinia*; a hybrid of *Selenia bilunaria* and *S. tetralunaria*; *Colias edusa* with one wing bleached; a yellow Cheltenham form of *Gonodontis bidentata*; melanic examples of *Zygaena trifolii*; extreme forms of ab. *variegata* of *Abraxas grossulariata*; etc. Mr. Riches, *Cossus ligniperda*, including a specimen with almost black hind wings. On behalf of Mr. L. A. E. Sabine, Mr. Newman, a long series of the Irish race of *Polyommatus icarus*, series of the Irish forms of *Epinephele jurtina*, *Rumicia phlaeas*, including ab. *alba*, *E. tilthonus*, *L. sinapis*, etc. Mr. A. A. W. Buckstone, aberrations of *Hipparchia semele*, of many local races. Rev. Geo. Wheeler, a series of *Melitaea phoebe* from Central Europe showing a wide range of variation over a limited area. Mr. C. W. Sperring, aberrations of British Lepidoptera, including *Colias edusa*, var. *helice*, minus blotches in border on hind wing, *Brenthis euphrosyne* with striated hind wing, a dull leaden *Agriades coridon*, etc. Mr. Edelsten, a yellow form of *Cybosia mesomella*, and a black and grey *Nisoniades tages* from Chippenham Fen. Mr. B. S. Williams, a series of the new Finchley form of *Dysstroma (Cidaria) truncata* and crosses between it and the usual black form. Mr. A. W. Mera, species and hybrids of the genus *Oporabia*, *O. filigrammaria*, *O. autumnaria*, *O. dilutata*, and its pale race *christyi*. Dr. Leonard Hopper, *Leucania extranea (unipuncta)* from Penryn, Cornwall, Sept. 1920. Mr. A. E. Tonge, Royston forms of *Agriades coridon* and aberrations of many British species, including a melanic male of *Boarmia consortaria*, a confluent *Zygaena trifolii*, a male *Agriades thetis* with extra orange lunules on the hind wings, etc. Mr. L. E. Dunster, bleached *Epinephele jurtina*, *Argynnis aglaia* with white marginal spots, *Aphantopus hyperantus* ab. *arete*, an *Arícia medon* without orange markings, etc. Mr. Johnston, aberrations of *Dryas paphia* and *Limenitis sibilla* from the New Forest. Captain Riley, the Scilly Islands race of *Epinephele jurtina*, much resembling the southern race *hispida*. Mr. H. E. Garrett, aberrations of British Lepidoptera, including *Rumicia phlaeas* with confluent spots on fore wing, *Euchloë cardamines* with dark hind margins to fore wings, etc. Mr. H. J. Turner, two coloured plates, folio, with figures of the larvae of *Eupithecia assimilita* and *E. abbreviata*. Prof. Poulton, F.R.S., a series of Butterflies captured migrating from one valley to another and back again next morning, with their mimics, in Selangor; they were captured in March 1920 and were *Delias* species, the mimics being *Euschema* species. On behalf of Mr. J. J. Joicey, Mr. G. Talbot, a large number of new and little known Lepidoptera from Central Ceram, Dutch New Guinea, French Guiana, Hainan Island, Peru, and Brazil, with

many striking and brilliant species, and a long series of aberrations of British Lepidoptera, including a gynandromorph of *Pieris napi*, *Colias edusa* ♀ with left fore wing ab. *helice*. Messrs. Ö. R. and A. de B. Goodman, a set of series of British Butterflies showing gradation of coloration and markings, and an American Hesperiid, *H. syrichtus*, from Surrey, also varied series of butterflies taken in July 1920 in the Rhone Valley and around Courmayeur, Italy. Mr. S. Edwards, mimetic species of *Papilio* and species of *Parthenos*. Mr. Douglas H. Pearson, a large number of species and forms taken by him in the Pyrenees, including very dark ♀ *Melitaea didyma*, the ab. *cleodora* form of *Argynnis cydippe*, *Parnassius apollo*, *Coenonympha oedipus*, *Lampides boeticus*, *Erebia lefebrei*, *E. manto* race *cecilia*, *Heteropterus morpheus*, etc. Mr. Robt. Adkin, the black ab. *chrysanthemi* of *Zygæna filipendulæ* bred from a Lancashire larva, and *Melitaea cinxia* with intensified markings. Mr. L. Tatchell, a photograph of a gynandromorph *Amorpha populi* from a Wanstead larva, larvae of *Dysstroma truncata*, and reported the pairing of a ♂ *Sphinx ligustri* with a ♀ *Smerinthus ocellatus*. Mr. K. G. Blair, on behalf of Dr. Gahan, a larva of a *Nemoptera* sp. from Syria, always found in dens on sand. Mr. Jackson, a mixed gynandromorph of *Cosmotriche potatoria* bred from Oxford. Mr. F. W. Edwards, a pair of the rare British gnat *Orthopodomyia pulchripalpis* reared from larvae from Epping Forest. Mr. Bowman, series of the forms of *Cosymbia pendularia* recently reared by him, especially ab. *nigro-subroseata* in various series of seven subordinate forms.—H. J. TURNER, Hon. Editor of *Proceedings*.

SOME INDIAN COLEOPTERA (5).

BY G. C. CHAMPION, F.Z.S.

(Continued from Vol. lvi. p. 249.)

The present contribution is based upon a study of a little batch of Malachiids sent by my eldest son from Kumaon, supplemented by a few from the native state of Chamba, etc., presented to the British Museum by Mr. H. E. Andrewes, and one or two more belonging to the Oxford Museum. The genera *Colotes* and *Hypebaeus* have not hitherto been recorded from continental India; but two species placed by Gorham under other names certainly belong to the former, and the two Indian *Ebaei* named by Pic probably appertain to the latter, as here understood.* In *Colotes*, ♂, the anterior tarsi are 4-jointed, the maxillary palpi are very peculiarly formed, and the elytra are not excavate at the apex. In *Hypebaeus*, ♂, the anterior tarsi are simple and 5-jointed (as in the genus *Anthocomus*), the maxillary palpi are normal, and the elytra are excavate in some species and not in others: two of the Indian insects referred to it have the elytra carinate laterally in both sexes, and a deep apical excavation in ♂; two others, with simple elytra, have an

* The apterous *H. cameroni* Pic (1907), from the shores of the Red Sea, should perhaps be removed from *Hypebaeus*: it has, however, the ♂ anterior tarsi 5-jointed.

enormously dilated first or third antennal joint in that sex. The classification here adopted is that of Abeille de Perrin, in his "Malachides d'Europe et pays voisins" (1890-91). The genera marked with an asterisk are additions to the Indian fauna.* There are various unnamed *Attali* from the Nilgiris, etc., in the Andrewes collection, but these must be left for the present.

Species enumerated in the present contribution.

| | |
|--|--|
| <i>Colotes gorhami</i> , n. n. | <i>Hypebaeus albocaudatus</i> , n. sp. |
| (= <i>Periebaeus punctatus</i> Gorh.). | " <i>sulcicauda</i> , n. sp. |
| " <i>dorsalis</i> Gorh. | " <i>4-signatus</i> , n. sp. |
| " <i>indianus</i> , n. sp. | " <i>spiniornis</i> , n. sp. |
| * <i>Hypebaeus auritus</i> , n. sp. | " <i>cerastes</i> , n. sp. |
| " <i>cyaneonotatus</i> Pic. | <i>Attalus bengalensis</i> Pic. |
| " <i>tincticollis</i> , n. sp. | <i>Incisomalachius notaticeps</i> Pic. |
| " <i>5-plagiatus</i> , n. sp. | * <i>Malachiomimus</i> (n. gen.) <i>latifrons</i> , n. sp. |
| " <i>triguttatus</i> , n. sp. | " <i>nigripilis</i> , n. sp. |
| " <i>lamellatus</i> , n. sp. | " <i>luteipes</i> , n. sp. |
| " <i>adumbratus</i> , n. sp. | " (?) <i>cristatus</i> , n. sp. |
| " <i>uncatus</i> , n. sp. | <i>Malachius indicus</i> Pic. |
| " <i>alboterminatus</i> , n. sp. | " <i>sikkimensis</i> Pic. |

Colotes gorhami, n. n.

Periebaeus punctatus Gorh., Ann. Soc. Ent. Belg. xxxix, p. 320 (1895) (nec Erichson).

♂. Maxillary palpi with joints 3 and 4 greatly thickened, 3 short, subtriangular, obliquely articulated to the narrow, elongate-triangular preceding joint, 4 acuminate-ovate, toothed at the base externally; antennal joint 1 elongate, widened, compressed, somewhat pyriform, 2 very short, 3 triangular, much longer than 2, 4 slightly stouter, 5-11 normal; anterior tarsi simple, 4-jointed.

♀. Maxillary palpi with joint 4 slender, acuminate-ovate; antennal joint I elongate, much narrower than in ♂, 3-11 normal; anterior tarsi 5-jointed.

Hab. INDIA, Dalhousie, Chamba (*coll. H. E. Andrewes: types of Gorham*); W. Almora and Ranikhet Divisions, S. Garhwal, and Sunderdhunga, all in Kumaon, alt. 4000-10,000 ft. (*H. G. C.*).

Sent in abundance from Kumaon, females preponderating. Gorham described the antennae from a ♂ and the elytra from a ♀, and he did not observe the conspicuous ♂-characters—4-jointed front tarsi and extraordinary palpi. The generic name used by him is a "nomen nudum" and the specific name is preoccupied, *Charopus punctatus* Er. being a *Colotes*.

* In my last paper, *op. cit.*, p. 241, *Matthius* was incorrectly given as an addition, due to the habitat of *M. albidipennis* Pic (1907), Pegu, having been omitted in the "Zoological Record."

A convex, shining black insect, the elytra with a common, angulate fascia before the middle, and the suture thence to the apex, testaceous, the antennal joints 1-4 also testaceous in both sexes.

Colotes dorsalis.

♀. *Ebaeus dorsalis* Gorh., Ann. Soc. Ent. Belg. xxxix, p. 321 (1895).

♂. Maxillary palpi with joints 3 and 4 enormously thickened, 3 obliquely articulated to 2, subtriangular, convex, 4 broad-oval, convex beneath, concave above, obliquely truncate at tip; antennal joint 1 elongate, greatly thickened.

♀. Maxillary palpi with joints 3 and 4 moderately thickened, 3 short, triangular, 4 subtriangular, broad, truncate at the apex; antennal joint 1 more slender, subpyriform.

Hab. S. INDIA, Belgaum [type]; CEYLON, Kandy (*G. E. Bryant*: 16.vi.1908).

In the series of nine specimens of *C. dorsalis* in the Andrewes collection there are two males; the others, as well as four taken in Ceylon by Mr. Bryant, are ♀ ♀. The anchor-like dilatation of the common black elytral patch in certain examples is not a mark of sexual distinction as suggested by Gorham, who overlooked the form of the tarsi and palpi of the male. *C. contaminatus* Ab. (1900), also from Kandy, must be a closely allied insect.

Colotes indianus, n. sp.

♂. Oblong, rather convex, widened posteriorly, moderately shining, cinereo-pubescent; black, the head in front, the palpi, joints 1-4 of the antennae, prothorax (the median vitta excepted), and legs (the posterior tibiae and the bases of the others excepted) testaceous; the head and prothorax excessively minutely, the elytra densely, finely, distinctly punctate. Head nearly as wide as the prothorax, the eyes small; antennae long, slender, subfiliform, joints 2 and 3 short, equal, 1 long, stout; maxillary palpi with joints 3 and 4 enormously thickened, 3 convex, subtriangular, 4 subquadrate, broadly truncate at the apex. Prothorax very short, strongly transverse, rounded at the sides. Elytra at the base not wider than the prothorax, widened and convex posteriorly, conjointly rounded at the tip, the humeri distinct.

Length $1\frac{1}{2}$ mm.

Hab. S. INDIA, Belgaum (ex coll. H. E. Andrewes).

One male. A close ally of the S. European and N. African *C. (Homaeodipnis) jareti* Duv., the legs and antennae not wholly testaceous, the third joint of the maxillary palpi (♂) extremely large, as broad as the fourth, which is transversely subquadrate. In the Andrewes collection there is also another very similar Indian *Colotes*, represented by a single example (♀) from the Nilgiris: this differs from

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

GEO. T. PORRITT, F.L.S., F.E.S., JOHN W. TAYLOR, M.Sc.,
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PRICE, 9d. NET. Prepaid Subscription, 8.6 per annum.

The Annual Subscription for 1921 is 15/-.

Third Series. No. 76.]
[No. 683.]

APRIL, 1921.

[PRICE 2/- NET.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LVII.

[THIRD SERIES—VOL. VII.]

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ENTOMOLOGICAL SOCIETY OF LONDON, 41, Queen's Gate, S.W.7.—April 6th, May 4th, June 1st.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C.2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

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Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.


CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.—This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

C. indianus in having the head, legs, and a humeral spot and the apices of the elytra, testaceous, the prothorax less transverse, etc., but in the absence of the ♂ it must be left unnamed for the present.

Hypebaeus auritus n. sp.

Moderately elongate, very finely pubescent, shining; black, the basal four joints of the antennae, the palpi (except at the tip), the prothorax (an elongate patch or streak on the disc excepted), the elytra with a common, angulate, ante-median fascia and an apical patch, the abdomen in part, and the legs (except the basal halves or more of the intermediate and posterior femora and the apical third or more of the posterior tibiae, which are black) testaceous or rufo-testaceous, the rest of the elytra cyaneous or bluish-green; the head and prothorax very sparsely, extremely minutely punctate (appearing almost smooth at first sight), the elytra closely, rather strongly punctured. Head narrower than the prothorax; antennae long, rather slender, subserrate, joint 2 shorter than 3, 11 elongate. Prothorax convex, transverse, rounded at the sides, narrowed towards the base. Elytra broader than the prothorax, widened posteriorly, carinate laterally, depressed on the disc, and with an oblique fold extending downward from the humeral callus.

♂. Elytra and excavate at the apex, the excavation bordered by a stout, prominent, -shaped ridge (the apices thus appearing produced); terminal abdominal segment bifurcate; posterior tibiae bowed inwards and slightly thickened towards the tip.

♀. Posterior tibiae more curved, slender, distinctly produced at the apex beyond the insertion of the tarsus; elytra rounded at tip; terminal abdominal segment less deeply emarginate.

Length 3-4 mm. (♂ ♀.)

Hab. W. Bhatkot, Ranikhet Division of Kumaon, alt. 4000 ft. (*H. G. C.*: v.1920).

Twenty-seven specimens, including eleven males, beaten from *Myrica nage*. The elytra have the base and a large anteriorly-rounded patch beyond the middle (confluent with the opposite one at the suture) metallic blue or green. The submarginal carina of the elytra is stout and prominent in both sexes.

Hypebaeus cyaneonotatus.

♀. *Attalus* (?) *cyaneonotatus* Pic, L'Echange, xix, p. 122 (1903) ?

♂. *Ebaeus* (?) *cyaneonotatus* Pic, Notes Leyden Mus. xxix, p. 58 (1907) ?

Extremely like *H. auritus*; the prothorax, the anterior half of the head in ♂, the elytral suture between the large subapical metallic spaces, and in some specimens the posterior tibiae entirely, testaceous, the elytra of ♂ with a

black transverse patch at the tip (leaving in this sex two rather narrow testaceous fasciae which are connected along the suture).

♂. Elytra deeply transversely excavate at the apex; the excavated space limited in front by a curved testaceous ridge, which (as seen in profile) is raised at the middle of the disc into a compressed, stout, conical prominence, and closed behind by a shorter black ridge, this latter (as seen from behind) bifurcate above. Terminal abdominal segment (pygidium) deeply cleft. Posterior tibiae slender, bowed inwards towards the apex.

Length $3-3\frac{1}{2}$ mm. (♂ ♀.)

Hab. W. Bhatkot, Ranikhet Division of Kumaon, alt. 4000 ft. (*H. G. C.*), Darjeeling [♀], Sikkim [♂] (*types of Pic*).

The above definition is taken from two males and six females, sent unmounted in the same tubes with a long series of *H. auritus* from Ranikhet. The ♀ has the head entirely black, as in both sexes of the latter, and the apical margin of the elytra testaceous. These examples agree so nearly with Pic's descriptions of *Ebaeus (Atталus) cyaneonotatus* that they are provisionally referred to the same species. *Ebaeus carinatipennis* Pic (1905), also from Sikkim, which has immaculate elytra, may belong to the present genus.

Hypebaeus tincticollis, n. sp.

♀. Moderately elongate, much widened posteriorly, sparsely, very finely pubescent, shining; black, the antennal joints 1-4, the apices of the femora, the tarsi, and the tibiae wholly or in part, testaceous; the prothorax (an anteriorly-widened, sharply-defined, black median vitta excepted) rufescent or testaceous; the elytra with a common, outwardly-dilated, transverse fascia below the base, extending down the suture to the tip, also testaceous; head and prothorax almost smooth, the elytra sparsely obsolete punctulate. Head subtriangular, the eyes rather prominent; antennae long, slender, feebly subserrate. Prothorax convex, broader than long, rounded at the sides, obliquely narrowed posteriorly. Elytra rather short, depressed on the disc below the base, convex and much widened towards the apex, the apices conjointly rounded. Legs very slender; posterior tibiae feebly curved, slightly sinuate within.

♂. Elytra narrower and less dilated posteriorly, the second black patch not reaching the tip; the apices testaceous and transversely excavate, the cavity bordered laterally and posteriorly by a stout, ear-like, exteriorly angulate ridge, the outer portion of which forms a prominent conical tubercle, the sutural margins each bearing a black, erect, setiform appendage near the tip.

Length $1\frac{1}{2}-2\frac{1}{8}$ mm. (♂ ♀.)

Hab. Khaula and W. Almora and Ranikhet Divisions of Kumaon, alt. 4500 ft. (*H. G. C.*: iv.1917, v.1919, etc.).

Found in abundance in Kumaon, ♀ ♀ largely preponderating. Separable from most of its Indian allies by the vittate prothorax and the ♂-characters.

Hypebaeus 5-plagiatus, n. sp.

♂. Moderately elongate, widened posteriorly, very finely pubescent, shining; testaceous, the head, a median vitta on the prothorax, the elytra with the base, a broad transverse fascia beyond the middle (not reaching the suture), and the transverse apical cavity, the under surface (the abdomen excepted), the femora to near the tip, and the posterior tibiae in part. black; the head and prothorax almost smooth, the elytra closely, minutely punctate. Head narrower than the prothorax; antennae moderately long, not very slender, subserrate from the third joint onward. Prothorax transverse, rounded at the sides. Elytra moderately long, blunt at the tip, depressed along the suture anteriorly; with a common, broad, semicircular, apical excavation, in which are two movable, erect, spiniform appendages on each side of the suture towards the apex. Terminal abdominal segment narrow and feebly emarginate at the tip. Posterior tibiae bowed in its apical third.

Length $2\frac{1}{4}$ mm.

Hab. Chamba, N. W. Himalaya (ex coll. H. E. Andrewes).

One specimen. Larger and broader than *H. tincticollis*, the antennae testaceous, the elytra closely, distinctly punctured, the apical excavation (♂) black and without lateral, ear-like, thickened expansions.

Hypebaeus triguttatus, n. sp.

♀. Elongate, widened posteriorly, shining, very finely pubescent; testaceous, the head, the elytra with the base and a large rounded patch on the disc of each towards the apex, the legs (the posterior femora to near the tip, and the others at the base, excepted) black, and the under surface in great part, black; the head and prothorax almost smooth, the elytra densely, finely punctate. Head narrower than the prothorax; antennae moderately long, slender, feebly serrate from the fourth joint onward. Prothorax transverse, convex, rounded at the sides. Elytra broader than the prothorax, much widened posteriorly, depressed on the disc below the base. Posterior tibiae bowed.

Length $2\frac{1}{4}$ – $2\frac{1}{2}$ mm.

Hab. Dalhousie, Chamba, N. W. Himalaya (ex coll. H. E. Andrewes).

Two females. This insect is so like *H. 5-plagiatus* from the same region that it is here included under the same genus. The more slender antennae, the non-vittate prothorax, and the rounded (not transverse) sub-apical spot and the less developed basal patch of the elytra, show that it cannot be the female of that species. The distinctly punctured elytra

distinguishes the present species from *H. uncatatus* and other forms with trimaculate elytra. The Dalhousie example was labelled by Gorham as "*Attalus*, or near it."

Hypebaeus lamellatus, n. sp.

♂. Moderately elongate, narrow, slightly widened posteriorly, sparsely, very finely pubescent, shining; testaceous, the head at the base, the elytra with a common heart-shaped scutellar patch and an oblique curved fascia on the disc of each beyond the middle (not quite reaching the suture or outer margin), and the under surface in great part, black; head and prothorax almost smooth, the elytra obsoletely punctulate. Head about as wide as the prothorax; antennae long, slender, joint 2 shorter than 3, 4-10 feebly serrate. Prothorax transverse, convex, rounded at the sides. Elytra moderately elongate; the apices produced and deeply, transversely excavate, the excavation truncato-lamellate behind and limited above by a transverse ridge. Legs very slender; posterior tibiae bowed inwards towards the apex.

♀. Antennae shorter and more slender; elytra with the black basal patch more extended laterally and the oblique post-median fascia replaced by a large oblong patch; posterior tibiae simply curved.

Length $1\frac{1}{2}$ - $1\frac{3}{4}$ mm.

Hab. Khaula and W. Almora and Ranikhet Divisions of Kumaon (*H. G. C.*).

Two males and five females, the latter scarcely separable from the same sex of *H. cerastes* (infra). The black post-median patch on the elytra in the species with excavate apices in ♂ ♂ is reduced in size or transverse in that sex, and much more extended longitudinally in ♀ ♀, this being particularly noticeable in the very long series of *H. tincticollis* before me. The smaller size, and the differently formed apices of the elytra in ♂, etc., distinguish *H. lamellatus* from *H. uncatatus*.

Hypebaeus adumbratus, n. sp.

♀. Elongate, narrow, widened posteriorly, very finely, sparsely pubescent, shining; testaceous, the sides and base of the head, joints 4- or 5-10 of the antennae, a spot or patch on each side of the prothorax, a common transverse patch at the base of the elytra (rarely extending to the humeri) and a very large patch on each towards the apex (extending to the suture and outer margin), the apices of the posterior femora, and the under surface in great part, black; the head and prothorax almost smooth, the elytra extremely finely, closely punctured. Head about as wide as the prothorax; antennae very long, slender, the joints subfiliform. Prothorax transverse, convex, rounded at the sides, obliquely narrowed behind. Elytra long, wider than the prothorax, depressed on the disc below the base, conjointly rounded at the tip. Legs long and very slender; posterior tibiae slightly curved.

♂. Head white in front, testaceous between the eyes, and black at the base, broader than in ♀; prothorax immaculate; elytra long, narrow, parallel,

nigro-bifasciata, the suture triangularly excavate before the tip, the apices produced, tumid, truncate and curved upward.

Length $2-2\frac{1}{2}$ mm.

Hab. Khaula and W. Almora and Ranikhet Divisions of Kumaon (*H. G. C.*: v.1919, etc.).

Fifteen specimens, all females, but one. More elongate than *H. tincticollis*, the ♀ with the head testaceous in the middle anteriorly, the prothorax nigro-maculate at the sides (instead of on the disc), the basal black space on the elytra rarely extending to the humeri, the post-median patch not reaching the tip, the antennae longer and subfiliform, the apices of the posterior femora only black. The ♂ is differently coloured.

*Hypebaeus uncatu*s, n. sp.

♂. Elongate, narrow, parallel-sided, sparsely, very finely pubescent, shining; testaceous, the head at the base, the elytra with a common transversely cordate scutellar patch and a broad, oblique, curved fascia beyond the middle (not reaching the suture or outer margin), the under surface in great part, and the posterior tibiae, black; head and prothorax almost smooth, the elytra obsoletely punctulate. Head about as broad as the prothorax; antennae long, slender, joint 2 shorter than 3, 4-10 feebly serrate. Prothorax transverse, convex, rounded at the sides. Elytra wider than the prothorax, long, parallel; with a very deep ^-shaped excavation at the apex, the excavation bordered at the sides and behind by a stout, exteriorly angulate, posteriorly truncate ridge, which is hook-like as seen from behind, the sutural margins each bearing a small black setiform appendage before the tip. Legs long and slender; posterior tibiae sinuate, bowed inwards towards the apex.

♀. Antennae as in ♂; elytra widened posteriorly, simply rounded at the tip, the black post-median patch much larger, more elongate, and reaching the outer margin, the scutellar spot sometimes more elongate; posterior tibiae more slender, wholly or in great part testaceous, the inner apical angle usually produced into a short tooth.

Var. ? ♀. The black post-median patch on the elytra partly divided by a downward or upward extension of the testaceous ground-colour (leaving a U-shaped mark or oblong annulus), the antennal joints 5-11 slightly darker.

Length $2-2\frac{3}{4}$ mm. (♂ ♀.)

Hab. Kosi River, Ranikhet Division, Almora Division, and Khaula, all in Kumaon (*H. G. C.*: i.1918, iii.1920, etc.).

One male, nine females, closely related to *H. adumbratus* (one ♂ only of which has been obtained), the prothorax of ♀ and posterior femora immaculate; the elytra of the ♂ parallel, narrow, and with a very broad, deep, common, angular excavation at the apex bordered behind by a stout hook-like margin. The typical ♀ is coloured like that of various allied forms, but it is larger than most of them and usually has the posterior tibiae toothed at the inner apical angle.

Hypebaeus alboterminatus, n. sp.

♂. Oblong, finely pubescent, moderately shining; black, the four basal joints of the antennae in part, the prothorax, and the legs (a black mark at the apices of the posterior tibiae excepted), testaceous; the elytra with a rather broad whitish space at the tip, the apical vesicles and the sides a little below the humeri testaceous; the head almost smooth, the prothorax sparsely, extremely minutely, the elytra more closely, punctulate. Head about as wide as the prothorax, short, unimpressed; antennae long, not very slender, serrate from joint 5 onward. Prothorax strongly transverse, convex, rounded at the sides. Elytra gradually widened to about the middle, excavate at the apex, the apices produced and each bearing a broad, stout, upturned, angular, ear-like appendage. Legs slender, rather short, the posterior tibiae curved.

Length $1\frac{3}{4}$ mm.

Hab. Upper Gumti Valley, W. Almora Division of Kumaon (*H. G. C.*: iv.1919).

Three males. Closely allied to the Mediterranean *H. flavicollis* Fr., differing in its smaller size, the shorter antennae and legs, the black-tipped posterior tibiae, and the produced apices of the elytra, which are furnished with broader and stouter vesiculiform appendages. The legs are shorter than in the other Indian species here referred to the genus *Hypebaeus*.

Hypebaeus albocaudatus, n. sp.

♂. Moderately elongate, narrow, finely pubescent, the head and prothorax shining, the elytra dull; black, the head, antennae (the infusate joints 6-10 excepted), prothorax, abdomen, and legs (the partly infusate posterior tibiae excepted), testaceous or rufo-testaceous; the elytra broadly whitish at the apex, the margins interruptedly and the apical appendages testaceous; the head and prothorax sparsely, and the elytra densely, very minutely, punctulate. Head as wide as the prothorax; antennae very long, slender, feebly serrate from joint 5 onward. Prothorax transverse, rounded at the sides. Elytra slightly widened to about the middle, obliquely narrowed and produced at the apex; each with a conical protuberance near the suture before the apical depression, the latter almost hidden by the transversely oval, concave, vertical, disciform appendage. Legs long, very slender, the posterior tibiae curved.

Length $1\frac{3}{4}$ mm.

Hab. Ranikhet Division of Kumaon (*H. G. C.*).

One male. Narrower than *H. alboterminatus*, the legs and antennae longer and more slender, the head testaceous (the basal half darker, perhaps due to discoloration), the apices of the elytra (♂) very differently formed.

(To be continued.)

ON *NABIS LATIVENTRIS* BOH. (HEMIPTERA-HETEROPTERA).

BY E. A. BUTLER, B.A., B.SC., F.E.S.

(Concluded from p. 61.)

There are probably two other intermediate instars besides those above described, the last two of which are probably the third and fifth. The fourth is very dark in colour, has the spines very well developed, and shows the rudiments of the wing-pads. But from what has been said, it will be evident that the larval changes consist of a good deal more than the very necessary ones of mere alteration in size and acquisition of wings. As already stated, there is no trace in the adult of the various spines that, blunt or otherwise, appear in different parts in the successive larval instars, and attain their maximum development when the insect is about half grown; it has been shown also that there is considerable change in the hairy equipment of the legs; some of these are merely temporary organs, altogether discarded when the insect matures, while others appear modified in both form and texture. One cannot but conclude that they are of some importance to the welfare of the insect, and it becomes an interesting question what their precise purpose and significance can be. Some of the spines are rather suggestive, in a profile view, of those on the propodaeum of an ant, but the correspondence is not very exact, as they are more numerous, some are paired and some single, and they are appended to a different part of the body. It is a further interesting question why this species alone has larvae showing superficial resemblance to ants and therefore entirely unlike those of the rest of the genus, although the adult very closely resembles in form and appearance one of the other species (*N. apterus*), and is not widely different from several others. By systematists, this species is included in the same subgenus as *N. apterus* F. and *N. major* Costa, an arrangement which is certainly not supported by the larval forms, since all three of them are of different types of structure.

The larvae are abundant in July and August, maturing, as a rule, towards the end of the latter month. The adult has been found from January to November, so that evidently the species passes the winter as an imago; and those specimens which appear in the early months of the year, and in fact up to late July or August, are the produce of the summer of the preceding year. The life of the individual would seem to last, as a maximum, for about 15 months. But no details are available as to the date of oviposition. According to Morley ("Hemiptera of Suffolk"), the insects copulate freely in captivity.

N. lativentris lives mainly on the ground amongst low herbage or the rubbish that accumulates on hedge-banks; but it is also taken by sweeping, which implies that it sometimes climbs the plants. Both Morley and I have found it common in some places by sweeping nettles-beds. Gredler ("Rhynchota Tirolensia") gives "under *Ribes* in March." The fully-grown larvae are much more conspicuous than the adult in consequence of the cream-coloured base of the abdomen; they also seem less inclined to hide under herbage. The insect is, doubtless, most naturally carnivorous, feeding upon living prey, though the direct evidence as to its food is slender. A small larva was found by Donisthorpe at Chale, I. W., on July 24th, 1906, sucking a ♀ *Plagiognathus arbustorum* which was much larger than itself (Poulton, "Predaceous Insects and their prey," Trans. Ent. Soc. Lond., 1906). The chief structural evidence bearing upon the subject is the predatorial shape of the fore-legs and the free condition of the very strong rostrum.

The ant-like form of the larva suggests myrmecophilous habits, at least in that period of its existence, and there are a few observations confirming this suggestion. It has been found running about in company with *Formica fusca* at Howth, Ireland, with *F. sanguinea* at Wellington College, and with *F. fusca* at Chale. Donisthorpe also found the young larvae in the nests of *F. sanguinea* and of *F. rufa*. Hamm found it with *Acanthomyops fuliginosa* and *A. nigra*. I know of nothing, however, to show what are the relations between the ants and the bugs. Moreover, the larvae, especially in their later instars, are quite as frequently, if not much more so, found running about on the ground independently of ants. The distribution of the species, again, is far wider than that of *F. sanguinea* or even of *F. rufa*. If the ant-like appearance is protective in function, it would seem that, as ants do not alter in size, while this larva does, the ant association should be with different species at different periods in the life-cycle, with smaller species of ants such as *A. nigra* when the *Nabis* is quite young, and with larger species such as the *Formicæ* when it is more fully grown. This does not, however, appear to be the case.

An observation made by Dr. Marchal in France shows that this insect may, on occasion, fulfil a useful rôle. He noticed, one day in July, that eggs of the white butterflies *Pieris brassicæ* and *P. rapæ*, which were on the leaves of some cabbages, were empty, but had evidently reached that condition, not by the regular process of hatching, but had been in some way rifled of their contents. Finding numbers of nymphs of *Nabis lativentris* on the leaves of the cabbages, he suspected them of

the raid. He therefore placed one of these insects in front of a fresh batch of *P. brassicae* eggs. It paused for a few moments, then felt over the eggs with its antennae, and finally plunged its rostrum into the basal part of an egg, which, as is well known, is shaped like a champagne bottle. It remained quite still in this position, and soon sucked the egg dry. It then passed to another and another, until most of the batch had been emptied (Bull. Ent. Soc. Fr. 1900).

Like most species of *Nabis*, this insect is dimorphous in both sexes: the usual form, the brachypterous one, has both hemielytra and wings present, and consisting of the usual parts, but they are considerably abbreviated. The macropterous form is very rare in this country, only five specimens being recorded, one in the Cambridge Museum (*ex. coll. Jenyns*), taken at Bottisham; one in the "Power" collection, taken at Woolacombe; one taken by E. Saunders at Bournemouth; one by B. S. Harwood at Colchester in 1905; and a fifth by E. A. Atmore at Hunstanton, Sept. 10, 1906. According to Puton, in France the macropterous form occurs chiefly in the south, where it is not uncommon. Whether the macropterous examples make much use of their wings is not known; the brachypterous ones are scarcely likely to do so, and in such a case one wonders why the abbreviation has stopped where it has, and has not become complete by the total disappearance of flight organs. The only reason I can suggest for the arrest of the process at the present stage is that these remnants of hemielytra and wings, though useless for flight, may be found advantageous for the strengthening of the body, as they overlap what is apparently the weakest point in the bodies of all Heteroptera, viz. the junction of thorax and abdomen.

N. lativentris is found over practically the whole of Europe, except the north of Russia; also in Morocco, Algeria, Syria, and Asia Minor. In Britain it is widely distributed, being recorded from all the coast counties of England stretching from Northumberland round to Somerset inclusive, except Yorks, and also from Cheshire, Cambs, Oxon, Bucks, Herts, Surrey, Berks, and Wilts; in Wales it has been met with in the counties of Glamorgan, Carmarthen, and Pembroke. There are no records from Scotland, but it occurs in Ireland.

14 Drylands Road,

Hornsey, N. S.

February 12th, 1921.

VARIATION IN BRITISH *PSITHYRUS* AND REMARKS
ON *BOMBUS POMORUM*.

BY R. C. L. PERKINS, M.A., D.S.C., F.R.S.

The many variations of our species of *Bombus* and *Psithyrus* have been insufficiently studied, and their distribution especially is very imperfectly known. The chief varieties of the latter genus are here mentioned, and when it has seemed advisable I have made tables for their separation. In many cases, no doubt, intermediate forms exist, and when more special attention is given to their collection I expect numerous other variations will be discovered. In cases where varieties were once considered to be distinct species, and had names given to them, I have added these names. As a rule the males are much more variable than the females. If specimens of the former are dissected, this should be done carefully so that the pubescence is not disordered, and on no account should this be allowed to get wet. The external structural characters are so good that dissection is never necessary, for doubtful specimens are never met with in my experience. Variations caused by patches of white or pale hairs, which are often irregular or asymmetrical, are not referred to. According to Sladen, they are generally due to pathological conditions.

P. campestris Panz.

♂♂.

- 1 (8) Thorax with distinct yellow band in front and frequently also yellow behind, or even yellow all over except on the disc.
- 2 (3) The whole abdomen except the extreme tip with yellow hairs, the sides of the thorax also clothed with yellow hairs, even those on the propodeum mostly or entirely yellow
...var. *a* (Scotland).
- 3 (2) Abdomen with at least some black hairs, if only at the sides of the second segment amongst the yellow ones.
- 4 (7) Basal abdominal segment with yellow clothing.
- 5 (6) Clothing of the abdomen yellow, but with some black hairs at the sides only of the second segment.....var. *β* (England).
- 6 (5) Second segment altogether or largely black-haired, so that an entire black band is formed, the third often more or less black-haired basally.....var. *γ* (*rossiellus* K.).
- 7 (4) Basal abdominal segment as well as the second black haired
...var. *δ* (*leanus* K.).
- 8 (1) Thorax entirely black-haired or at most with faint indications of a band in front.
- 9 (10) Basal abdominal segments black-haired, the apical ones notably pale, the hairs yellowish, subolivaceous or sometimes obscurely subferruginous.....var. *ε* (*franciscanus* K.).

- 10 (9) Abdomen wholly black-haired, the apical segments at most somewhat less deeply black than the basal. . . . var. ζ (*subterraneus* K.).

♀ ♀.

- 1 (2) Thorax entirely yellow-haired above except for the middle of the disc, the basal abdominal segment conspicuously so clothed for the most part, the mesopleura entirely yellow
 var. α (Scotland).
- 2 (1) Thorax with a conspicuous black median band, or yellow only in front or entirely black.
- 3 (6) Thorax with a distinct yellow band in front and sometimes a second on the posterior (scutellar) part.
- 4 (5) The scutellum conspicuously pale-haired or yellow
 var. β .
- 5 (4) The scutellar region black or at least with the band very obscure, the pale hairs becoming sordid or much mixed with black
 var. γ .
- 6 (3) Thorax and abdomen entirely black, except that there may be a faint indication of a band on the former, or a few pale or yellowish hairs at the extreme sides of the fourth segment of the latter
 var. δ .

The variety α of both ♂ and ♀ was taken by Mr. K. J. Morton at L. Sween in August and I have seen no other specimens. The species, he tells me, was not common, but all the examples were of this variety. The most highly-coloured ♂ I have seen in the South is the var. β , of infrequent occurrence, but probably widely distributed, as I have taken single examples in N. Wilts and in Devon, and the specimen mentioned in Sladen's book as being in the collection of Edward Saunders from Chobham is presumably the same. Superficially it resembles a variety of *Bombus latreillellus* ♂.

The var. δ (*leeanus* K.) I have not noticed in Devon, though intermediates between this and var. γ are frequent, but I have a very fine typical specimen taken years ago in Suffolk, the county in which Kirby collected it, but only once ("*semel capta*").

The black males are widely distributed in the South and not rare, and are the *subterraneus* of Kirby, who considered his ♂ to be the other sex of a *Bombus* thus named by Linnaeus. Black females are much rarer, and I have only once or twice seen a living specimen. Smith records five or six of these all from Surrey and Kent in about forty years' collecting.

P. distinctus Pérez.

The variation in this species is much less than in the preceding. The division of the white tail from the basal black of the abdomen by yellow hairs is often wanting, these yellow hairs being entirely absent

P. vestalis Fourer.

This species is one of the least variable in the genus, and specimens in which the yellow hairs dividing the black and white ones of the abdomen are absent, are rare in the fresh specimens of the ♂, though these hairs naturally fade to white on long exposure. Some males resemble the females in having the first abdominal segment entirely black-haired, but more often the hairs are yellow, either wholly or in part. The yellow thoracic band is sometimes more or less darkened by admixture of black hairs.

P. barbutellus K.

A rather constant species, the white tail of the ♂ in some examples more sordid than in others, but I have seen none with this part brightly yellow.

In the female, yellow hairs sometimes cover the whole scutellum; in other examples a pale fringe is formed only posteriorly, and even these hairs may be sordid, so that possibly the thorax is sometimes without any posterior band. Smith, in fact, records such variation in both sexes, but as he included *quadricolor* in *barbutellus*, it is likely that he was looking at specimens of the former. The basal abdominal segment is entirely black in two examples from Scotland that are before me, but similar specimens are common in the South of England, where, in other individuals, the lateral tufts and the apical fringe of the same segment are yellow. These yellow hairs may form a distinct band, which is usually, if not always, more or less interrupted in the middle.

P. quadricolor Lep.

More variable than the preceding species.

♂ ♂.

- 1 (4) Third and fourth segments with white or almost white hairs, except that in some specimens the former has dark clothing basally.
- 2 (3) Basal abdominal segment entirely black-haired. (In this variety the thoracic band is liable to become dusky and even to appear interrupted in the middle) var. *α*.
- 3 (2) Basal segment more or less conspicuously yellow-haired
..... var. *β* (normal form).
- 4 (1) Third and fourth segments with conspicuously yellow hairs. (In a specimen from Scotland the yellow hairs of the first abdominal segment are more sordid and less extensive, and the posterior yellow band is narrower than in a Devonshire example)
..... var. *γ*.

♀ ♀.

- 1 (2) Basal abdominal segment with yellow hairs, sometimes forming a distinct apical band var. *α*.
- 2 (1) Basal segment entirely black-haired var. *β*.

Sladen was inclined to reject *pomorum* from the British list, since it had not been found for so many years, but I think it should be retained. The year 1857, in which the males were caught, was one, and perhaps the best, of a succession of seasons extraordinarily favourable for bees, but 1859 and the following years were most unfavourable, especially for Bombi, as Smith has recorded. Nevertheless, *pomorum* survived these abnormally bad seasons, since the female was captured by Smith's son in 1864. Until Sladen himself captured a single male, *B. cullumanus* K. was almost in the same case as *pomorum* as regards captures in England. Seeing that the former had been taken in such distant localities as Brighton, Bristol, and Suffolk, though no one ever obtained either female or worker, and was lost until Sladen captured a single male in Kent, while *pomorum* is likely to be a more local species, and might, in its British form, be passed over, the ♂ as *Psithyrus*, the ♀ as one of the commoner *Bombus*, I see no reason to despair of its re-discovery.

Alfken records *pomorum* in N. W. Germany as being found in the neighbourhood of sand dunes and marshes, and distinguished by its wild flight. The females and workers are particularly attached to the red clover, the males visiting *Knautia*. The nest was found in the loose sand. No doubt the neighbourhood of Deal was a most likely spot for the occurrence of the species, and it should be sought in similar localities elsewhere. One can easily imagine that Smith, who was keenly collecting *Andrena hattorfiana* on *Knautia* in 1857, may have found *pomorum* on the same flower. In the Bignell collection at Plymouth Museum, under the name *B. lapponicus* are two examples without locality labels—the one correctly named, the other a ♀ of the mountain race of *pomorum* called *elegans*, which considerably resembles *B. distinguendus* in appearance. *B. lapponicus* is, as Bignell recorded, abundant on Dartmoor, and no doubt his specimen was taken there, so that it is possible that the other species might have also occurred with it. Bignell's British collection, however, contained a few foreign specimens (e.g. *Philanthus triangulum* and *Megalodontes klugii*), and though all these have, so far as I know, labels indicating their foreign origin, the absence of such a label would not at present justify us in considering his *Bombus elegans* as British.

Newton Abbot.

February 7th, 1921.

The "Godman" library sale.—The following prices for works on Lepidoptera were realized at the sale at Sotheby's Rooms on March 3rd and 4th: Butler and others, "Illustrations of Lepidoptera Heterocera," 9 vols., £22; Distant, "Rhopalocera Malayana," £8 10s.; Doubleday and Westwood, "Genera of Diurnal Lepidoptera," 2 vols., £21; Edwards, W. H., "Butterflies of N. America," 3 vols., £27; Felder, "Lepidoptera Reise Novara," 2 vols., £19; Godart, "Lépidoptères de France," 17 vols., £19; Hampson, "Catalogue Lepidoptera Phalænæ," 22 vols., £18; Herrich-Schäffer, "Syst. Bearbeitung Schmett. Europa," 10 vols., £54; "Samml. ausseurop. Schmett.," £26; Hewitson, "Illustrations of Exotic Butterflies," £26; "Illustrations of Diurnal Lepidoptera," £10; Hübner, "Samml. europ. Schmetterlinge," 8 vols., £40; "Samml. exot. Schmetterlinge," 4 vols., £70; Leech, "Butterflies of China, etc.," 3 vols., £7 10s.; Marshall and de Nicéville, "Butterflies of India, etc.," 3 vols., £9; Moore, "Lepidoptera of Ceylon," 3 vols., £20; "Lepidoptera Indica," 10 vols., £75; Oberthür, "Études d'Entomologie," 21 vols., £50; "Études Lépidoptérologie comparée," 20 vols., £50; Scudder, "Butterflies of E. United States, etc.," 4 vols., £9; Semper, "Schmett. Philippinischen Inseln," £8 5s.; Sepp, "Surinaamsche Vlinders," 3 vols., £25 10s.; Smith, J. E., "Lepid. insects of Georgia," 2 vols., £16; Smith and Kirby, "Rhopalocera Exotica," 3 vols., £17 10s.; Staudinger and Schatz, "Exotische Schmetterlinge," 2 vols., £5; Trimen, "South African Butterflies," 3 vols., £5 5s.—Eds.

Tapinotus sellatus F. at Horning.—I am pleased to record the further occurrence of this rare weevil at its old locality near Horning, Norfolk. On June 5th last I captured several examples by searching the leaves of *Lysimachia vulgaris*. It will be remembered that previously three British specimens only have been recorded over a period of upwards of 80 years. It is very puzzling to account for the extraordinarily elusive habits of this species. I have collected beetles during every one of the last 30 years over the very ground where it occurred, but have never before met with an example. It is conspicuous enough and could scarcely have been overlooked.—H. J. THOULESS, "Corfe," College Road, Norwich: February 21st, 1921.

Leptura rubra L. in Norfolk.—In Ent. Mo. Mag. vol. lv, p. 174, I recorded the capture of an example (♂) of this fine Longicorn beetle at Horsford on August 6th, 1918. I have since further investigated the locality, and as a result have taken each year a small number of specimens of *L. rubra*. The opinion I expressed that this species is an old inhabitant of the Horsford district appears to be confirmed, as I find that it occurs sparingly over a very considerable area, and very old remains of the beetle were found in rotten stumps of trees felled many years ago. Possibly it would be found elsewhere if carefully worked for, but it appears to be a very difficult insect to collect, as, with the exception of two, all my specimens were obtained by breaking up rather firm stumps of Scots pine. The sexes were in about equal numbers and I saw also larvae and pupae. It did not occur in flowers or by sweeping herbage.—H. J. THOULESS.

Coleoptera in Hertfordshire and Berkshire.—I had a day's collecting last summer at Watford, Herts. A few rather local species turned up, particularly

Scerptia fuscula, taken from under the bark of a large old oak log. A short visit to the same log at the end of February produced many remains of, and a few living, *Melasis buprestoides*, also six *Cis bilamellatus*. I think this is the furthest north the latter species has occurred. A very little collecting in this neighbourhood has been done. The best species found are, *Euthia schaumii*, from a cellar; plenty of *Platypus cylindrus* and three *Laemophloeus duplicatus*.—NORMAN H. JOY, Theale, Berks.—March 11th, 1921.

Coleoptera on the Sandhills at Gullane, Firth of Forth.—On May 8th last, a magnificently hot, still day, in company with Mr. Black, I paid a visit to the extensive sandhills near Gullane on the Firth of Forth, a place I have frequently visited with somewhat indifferent results, but, on this occasion, we must have just struck the period when the beetle fauna of these sandhills was at its best, as the following records will testify:—*Cleonus sulcirostris* L., was in the utmost profusion—there must have been hundreds of specimens crawling about on the bare sand, yet, on previous visits, I have never seen more than one or two examples; about equally common was *Pachylopus maritimus* Steph., which was flying about as well as crawling on the bare sandy slopes; though I have often searched for it on this very spot, this was the first occasion it has turned up; *Morychus aeneus* F. was also very common, and *Otiorrhynchus atroapterus* De G. in considerable numbers; these four species almost monopolised the area we examined. In a damp hollow between two ranges of sandhills, where there was a pool of rain-water still lying, I found *Bledius fuscipes* Rye in hundreds, by digging up their burrows, and *Bledius opreus* Bloek very sparingly. We searched for carrion, but could only find one or two desiccated carcasses of rabbits, out of which *Choleva nigrita* Er. and *Philonthus agilis* Gr. were beaten. The actual seashore produced nothing, but the profusion of species, normally very rare, was a reward for the day's outing, and seems worth putting on record.—T. HUDSON BEARE, 10 Regent Terrace, Edinburgh: March 3rd, 1921.

Neuraphes sparshalli Denny, etc., at Hawthornden, near Edinburgh.—On November 6th last, a fine mild day, I paid a visit to a wooded bank, near Hawthornden railway station, where, by cutting grass tufts and shaking them over paper, I have on previous visits found many good species, several new to the Scottish fauna, and I have never on any visit failed to turn up something new to the fauna of this very prolific bank. On this occasion, the most interesting capture was five specimens of *Neuraphes sparshalli* Denny, all shaken out of one rather dry tuft, at the foot of which was a deserted field mouse's nest, well tenanted with fleas. The other species taken were *Neuraphes angulatus* Müll. (first met with in Scotland by me at this bank several years ago); *Scydmaenus collaris* Müll.; *Bythinus puncticollis* Denny; *Atomaria apicalis* Er.; *Atomaria fuscata* Sch.; *Choleva anisotomoides* Spence; *Cryptophagus setulosus* Stm.; *Cryptophagus pubescens* Stm.; *Syntomium aeneum* Müll.; *Encephalus complicans* Westw.; *Hypocyrtus seminum* Er.; and many other common and widely distributed forms. I paid another visit on November 13th, but, unfortunately, a heavy hail and rainstorm put an abrupt end to the collecting, and I was unable to get any more *N. sparshalli* in the short time I was able to collect before my work was put an end to.—T. HUDSON BEARE.

Coleoptera in Worcestershire, 1920.—The following insects have been taken by Mr. A. D. Perrins and myself during the past season, and in some cases they are new records for the district:—*Xyleborus dispar*, fairly common in plum, also found attacking oak stumps and a burnt oak-tree; a large number of both sexes were obtained in October. *Rhizophagus politus*, in abundance under Scots fir bark with *Tomicus laricis* and *R. dispar*. *Stenostola ferrea*, from lime boughs used as a fence; the insect flies at the top of the lime-trees and might easily be overlooked. It was found in abundance in one field, four or five specimens often being in the net together. *Ceuthorrhynchidius posthumus*, from Hartlebury Common, on *Teesdalia nudicaulis*; the last specimen was observed on July 4th. *Philopodon geminulus*, Hartlebury Common, renewing an old record of Mr. Blatch. *Notarus monoceros*, Mr. Perrins found a number of specimens of this beetle inside the abdomen of a dead *Meloe* sp.?; it is found quite commonly on willows. *Clinocara undulata*, Wyre Forest, in faggots in company with *Cyrtotriplax bipustulata*, *Trachodes hispidus*, and *Rhizophagus cribratus*. *Clythra 4-punctata* and *Coccinella distincta*, emerging from the nests of *F. rufa*. *Labidostomis tridentata*, one specimen on birch. *Sibinia potentillae*, Hartlebury Common. *Brachytarsus fasciatus*, on palings and by evening sweeping under oaks. *Dorcatoma flavicornis*, on a pear-tree. *Saprinus virescens*, on hemlock with *Phaedon tumidulum*. *Tetratoma desmaresti*, evening sweeping under oaks. *Cassida flaveola*, in all stages on *Spergula arvensis*. *Thulyca sericea*, by evening sweeping under oaks. *Cryphalus fagi*, *binodulus*, and *tiliae*, these three species were found, in their respective trees, within a space of one hundred yards.—G. H. ASHE, Hartlebury, Worcs.: March 15th, 1921.

Coleoptera of Guernsey.—Mr. J. R. Le B. Tomlin's interesting note on the *Coleoptera* of Guernsey in this Magazine for January 1921, prompts me to record the following personal observations made during August and September, 1920. *Cicindela campestris* L.—The burrows of this species are exceedingly common in suitable sandy places all round the coast of Guernsey. It matters little whether the surface on which the burrows open is vertical or horizontal. In a single patch of burrows at Fort George I found the insect in all three stages—the larva, pupa, and imago. The imagines were at the *mouths* of the burrows and were so active that I think they would have been on the wing had there been any sunshine. In the light of V. E. Shelford's work on the life-histories of American tiger-beetles (Journ. Linn. Soc., Zool. xxx, 1909) I regard this as evidence that in Guernsey *C. campestris* L. breeds continuously throughout the warm months. *Anchomenus albipes* F. was common in company with the Isopod *Ligia oceanica* L. in decaying seaweed beneath stones and shingle not far above high-tide mark at Fort Crogg point, Vagon Bay. *Nebria complanata* L., common under flat stones at the south end of the "shell beach," Herm. *Brosicus cephalotes* L., very common under dry sea shore stones on the N.W. coast of Guernsey. *Pristonychus terricola* Hbst., in a ruined cromlech on Herm. *Aëpus* sp., I spent some time searching for *Aëpus* without result, but at last found a species of this genus (which I have not yet determined) fairly common under stones on the south side of the causeway that at low tide joins the rocks lying off Port Grat to the point of land between it and Grande Havre. The insect appeared only to occur very close to extreme low water

mark and was not found under stones nearer high tide level. *Cafius* spp. two or three species of *Cafius* were abundant under stones near decaying seaweed just above high tide mark all round the coast. I believe that they were feeding on sand fleas (*Talitrus* spp. and other Amphipods), for they were not in evidence where there were only few of these crustacea. Several other species of *Staphylinidae* were in company with *Cafius*. *Ocypus olens* Müll., extraordinarily abundant under stones on Point Denible, Sark. *Philonthus varians* Plk., larvae and pupae were common in damp sand on the coast at the south side of Vagon Bay. Imagines emerged in the second week of September. The larvae were subject to the attacks of a small ichneumon not yet determined. *Coccinella 7-punctata* L., very common. A specimen with the humeral spots almost absent was taken on the cliffs above Jaonnet Bay. *Scymnus frontalis* F., a ♂ specimen was seen on the south side of St. Sampson's Harbour. *Geotrupes pyrenaicus* Charp., common on heaths and cliff-tops in Guernsey and Sark. *Lacon murinus* L., two larvae were found under about 18 inches of sandy soil in a ruined cromlech on them. *Cteniopus sulphureus* L., abundant on *Umbelliferae* on the cliffs above Petit Bot Bay. The original list of Guernsey *Coleoptera* (Ansted's "Channel Islands," 1865) has been considerably added to by the work of Luff, details of which (for *Coleoptera*) may be found in the Transactions of the Guernsey Society of Natural Science for the years 1893-1904. The total of species is now 557 for Guernsey, for Alderney 156, for Herm 133, for Jethou 29. 601 species in all have been recorded from these islands.—MICHAEL G. L. PERKINS, Trinity College, Cambridge: March 5th, 1921.

Hemimerus hansenii Sharp in East Africa.—In January, 1921, the Nairobi Museum received a large rat (*Cricetomys* sp.) for identification, from the Health Department. On lifting the animal I noticed a bright brown insect running rapidly amongst its fur. This was quickly transferred to a tube, and I was for some time rather puzzled as to what family it belonged. However, on a careful examination, it was found to be a *Hemimerus*. Sharp (Cambridge Nat. Hist. vol. v, p. 217, *et seq.*) records two species of this genus, *H. hansenii* and *H. talpoides*, both from W. Africa. My insect is apparently a female of *H. hansenii*, which is attached to the rat, *Cricetomys gambianus*. This animal appears to have a very wide distribution; Hollister records it from Kenya Colony, and Dr. Breyer tells me that he has recently met with it in the Transvaal. Dr. Hansen, the original discoverer of *H. hansenii*, was more fortunate than myself in finding this Orthopteron present in considerable numbers; repeated search on my part failed to reveal more than one specimen. It is probable that others dropped from the rat, as the mammal was killed about two miles from Nairobi. Although the *Hemimerus* was observed running about in a box with considerable rapidity no attempt at leaping was noticed, as mentioned by Dr. Sharp (*op. cit.* p. 218). Mr. T. J. Anderson, the Government Entomologist for Kenya Colony, informs me (*in litt.*) that there are no Hemimeridae in the collection of the Entomological Division at Kabete, nor has he any record of the occurrence of either species in East Africa. It is therefore possible that this is the first time that *H. hansenii* has been observed in that region.—A. F. J. GEDYE, Curator of the Nairobi Museum, Kenya Colony: February 7th, 1921.

On Phaenoserphus levifrons Förster (Proctotrypoides).—In 1861, Förster in "Programm der Realschule zu Aachen für das Schuljahr 1860–61, p. xl, no. 98," described a species of the genus *Proctotrupes* (now called *Serphus* in restoration of the name first given by Schrank in 1780) which he called *levifrons*. Kieffer in André's "Species des Hyménoptères d'Europe et d'Algérie," tome x, p. 313, says that, as Förster did not indicate the form of the tarsal claws, nor that of the head nor the antennae, it could not be said whether this insect should be classified under the genus *Phaenoserphus* or the genus *Exallonyx*. Three specimens, two female and one male, which were sent to me recently for identification belong to the genus *Phaenoserphus* Kieff., and are undoubtedly Förster's species *levifrons*, thus, incidentally, making an addition to the British list. *Phaenoserphus levifrons* may be distinguished from all the others of the genus by the form of the radial cellule, which is so narrow in both sexes as to be almost wanting altogether. A close examination shows that the radius is distinct, but is adjacent to and parallel with the edge of the stigma. Below the stigma is a faint brownish stain, bifurcated in shape, and having its apex at the lower point of the stigma. In the female the fore wings are very narrow, but in the male are of normal breadth. Both wings are somewhat smoky, and there are distinct traces of other venation besides the marginal, postmarginal, and radial veins. The face is quite flat between the antennae. The propodeum is entirely rugose without any definite or smooth area, but in the female has a transverse raised line or keel across the apical (*i.e.* hindmost) third. The petiole is longer than wide, is rugose, and in the female has a longitudinal furrow running down the centre. The base of the large abdominal segment (*i.e.* the second segment of Förster) is strongly striated at the base. The antennae are filiform and simple in both sexes. The labrum is transverse and sinuated, but without comparison with the other species it cannot be said whether this is a common feature or not. The specimens examined were bred by Mr. H. Britten from a Carabid larva taken in his garden at Great Salkeld, Cumberland; they emerged on 22nd September, 1912. I take this opportunity of inviting collectors, and especially those who breed Coleoptera, to send to me examples of this family *Serphidae*, more popularly known under the name of the genus *Proctotrupes*. The specimens belonging to the British Museum are in my hands for classification, but they are few, old, and dilapidated, and there is much need of material, not only to assist in the work of bringing the classification, which I hope to publish in these pages, up to date; but also to add to and complete the national collection. The apterous and myrmecophilous forms are particularly wanted.—L. A. Box, Shere, Guildford: February, 1921.

Observations on the Life-History of the Wheat-bulb Fly (Leptohylemyia coarctata Fall.)—It has been suggested to me that my paper ("Journal of Agricultural Science," vol. xi, pp. 99–105, Jan. 1921, with two plates) may escape the notice of some entomologists interested unless reference is made to it in an entomological journal. The paper in question gives a summary of experiments and observations made in the laboratory and in the field, which throw some light on the life-history of this pest. The following is the life-history as deduced from these experiments and observations.

The flies hatch out in June and July and lay their eggs in bare soil about one-eighth of an inch below the surface in July, August, and possibly

September. Most of these eggs hatch out early in the following spring, as they are usually found in the wheat plants in March and April. A few may, however, hatch out the same autumn, as on November 23rd, 1917, I found two third-stage larvae attacking wheat plants on the University Farm. On February 13th, 1920, I found a second-stage larva attacking wheat on the University Farm.

The larva on hatching from the egg makes its way into the middle of a wheat shoot, where it feeds at the base of the shoot, which it kills. When fully fed the third-stage larvae make their way into the soil, where they pupate about one-and-a-half to two inches below the surface. Pupation usually takes place in May.—F. R. PETHERBRIDGE, M.A., School of Agriculture, Cambridge: *March 11th, 1921.*

Obituary.

Louis Compton Miall.—On February 21st, 1921, occurred the death of Dr. L. C. Miall, F.R.S., Emeritus Professor of Biology in the University of Leeds, aged 78. The son of a Congregational Minister at Bradford, he was educated at Silcoates School, but left at the age of 15 to take up a teaching post in a private school at Bradford. He became interested in natural history through contact with his brother, who was a medical student; but he had no systematic training in biology, though he afterwards attended the Leeds School of Medicine in order to learn something of biological technique. He became Secretary to the Bradford Philosophical Society at the age of about 20. In 1871 he was appointed Curator of the Museum of the Leeds Philosophical Society, and in 1876 became the first Professor of Biology in the Yorkshire College of Science, continuing in that office in the University of Leeds till 1907. He then retired to Letchworth, but returned to the North after the death of his wife in 1918.

Miall's work covered a very wide field, and he gained a leading position through his studies as a biologist, his excellent style as a writer, and his talents as a lecturer. His earlier work was palaeontological, and through it he came into contact with Huxley, to whose influence he attributed much. His subsequent zoological work was largely concerned with insects, and as an entomologist he is probably best known by his "Natural History of Aquatic Insects," published in 1895, and reprinted with additions in 1903 and again in 1912; and by his three monographs on the structure and life-history of, respectively, the cockroach (written in conjunction with Prof. A. Denny, 1886); the harlequin fly, *Chironomus* (done in collaboration with A. R. Hammond, 1900); and the Tipulid fly *Phalacrocera replicata* (in collaboration with R. Shelford, Tr. Ent. Soc. Lond. 1897). He was intensely keen on what he termed "live natural history," as was evinced not only in parts of the writings mentioned above, but also in his books "Round the Year" and "House, Garden, and Field," and in his Presidential Address to the Zoological Section of the British Association at Toronto in 1897, on "Life-history studies of animals" (reprinted in Ann. Rep. Smithsonian Inst. for 1897). He also had strong views on methods of teaching, and wrote books on "Object Lessons from Nature" and "Thirty Years of Teaching." Nor was the historical side of

biology beyond the scope of his interests, for during his retirement at Letchworth he wrote a "History of Biology" and "The early naturalists and their work." He also showed a lifelong interest for the classics.

Miall was elected to the Royal Society in 1892. He joined the Entomological Society in 1894, served twice on the Council, and became a "Special Life Fellow" in 1916. He was not personally known to the writer, who is indebted to a notice in the "Times" for many of the biographical particulars here given.—H. S.

John Clarke Hawkshaw.—Mr. J. C. Hawkshaw, F.E.S., died at his residence, Hollycombe, Sussex (near Liphook), on Feb. 12th, 1921, in his 80th year. The eldest son of Sir John Hawkshaw, F.R.S., the eminent engineer, he was educated at Westminster School and Trinity College, Cambridge (he was President of the University Boat Club in 1864), and was himself for many years an engineer by profession. He early became a keen collector of Lepidoptera, especially "microlepidoptera," and formed a large collection, occupying over four hundred small drawers in cases specially devised by himself. All have full data attached, arranged on a uniform system. The greater number of specimens is British, but Mr. Hawkshaw also collected on the Continent, particularly in South Norway. There he took several hundred species, principally in the neighbourhood of some property which he owned at Vigeland's Foss on the Otteraa River, near Christiansand. He published an account of the locality and a list of his captures there in the "Entomologist" for March and April, 1919. He told the writer that in the year 1857 he met Roland Trimen on the Brighton Downs and collected with him, and that to Trimen he owed much help in the first stages of forming a collection: also that, previous to his retirement from business, nearly all his work on his collection was done between 4.30 and 7.30 in the early morning. He joined the Entomological Society in 1910. Mr. Hawkshaw was a keen arboriculturist, and his beautiful estate at Hollycombe contained a large collection of foreign trees and flowering shrubs. His library included extensive series of books on arboriculture and on travels, and he had at one period also formed a collection of certain objects of art.—H. S.

THE BRITISH SPECIES OF THE ANTHOMYID GENUS *LIMNOPHORA* DESV. (DIPTERA).

BY J. E. COLLIN, F.E.S.

The very large Dipterous family Anthomyiidae is well known as one in which a natural grouping of the species into genera and a satisfactory characterisation of such genera is a most difficult problem. Characters used by the older writers for this purpose, such as the approximation or separation of the eyes in the male, the bare, pubescent, or plumose arista, the glabrous or hairy eyes, have all proved to result in a thoroughly unreliable and unnatural arrangement of the species. The uselessness of

such characters can hardly be better exemplified than by the group of species now included under the generic term *Limnophora*. This group of obviously allied species includes those with the eyes in the male touching on the frons, and in others as widely separated as in the female; species with the arista practically bare, pubescent, or sub-plumose; species with the eyes distinctly hairy and others with the eyes bare. This wide range of variation in those characters considered by many previous students as of generic value, accounts for certain species having been included by some writers in other genera such as *Spilogaster* and *Coenosia*.

The group of Anthomyids included under *Limnophora* in its widest sense may be shortly characterized as follows:—

Thorax with two pairs of presutural dorsocentral bristles, no prealar bristle and sternopleural bristles 1 : 1 or 1 : 2, but never arranged in an equilateral triangle. Anal vein not reaching to margin of wing, spine at mediastinal break in costa usually very small and insignificant. Hind tibiae without the dorsal bristle such as is present in, for example, *Phaonia* (= *Hyetodesia*). Arista usually almost bare, at most only occasionally with the hairs above and below together as long as third antennal joint is deep. Abdomen usually with pairs of triangular or trapezoid dark markings. Legs in British species always black, with simple front femora.

This definition includes *Spilogaster nigrinervis* Zett., *S. maculosa* Mg., and *S. notata* Fln., and the species of *Melanochila* of Verrall's "List" in addition to the whole of his species of *Limnophora*. Some of them bear a considerable resemblance to the black-legged species of *Mydaea* (*Spilogaster*), but may always be distinguished by the smaller number of sternopleural bristles (often 2 : 2 in *Mydaea*) or by the absence of the prealar bristle. Others resemble species of *Lispe*, but the facial orbits are bare, the palpi not conspicuously dilated at the tip, and the pteropleura without bristles.

Many attempts have been made, especially in recent years, to split off from *Limnophora* some of the more aberrant species as distinct genera or subgenera, and in many cases there appears to be justification for this course, but in none of these attempts has use been made of the following characters which will be found to divide the group into at least two natural divisions. If the base of the cubital vein be examined, it will be found in many species to be quite bare (Division I), while in others there are always small bristles, at least on the nodose junction with the radial vein, and usually both on the upper and the under side; while in all the species with the cubital vein thus armed, known to the

writer, the prosternal plate between the front coxae also bears a few short bristles or hairs on each side margin (Division II). The species of Division I all have the prosternal plate quite bare except in *Neolimnophora*.

It is now necessary to examine the various proposed generic and subgeneric names and see how they fall within these two main divisions. Taking them in chronological order, we have:—

LIMNOPHORA Dsv. 1830.—Desvoidy included fourteen supposed European species in this genus, not one of which has been recognized by subsequent authors! He failed to specify any particular species as the type of his genus, but Coquillett (1910) suggested that *L. palustris* might be so considered; and as Desvoidy appears to have used this species as a sort of model with which he compared, or from which he built up, many of his other species, there is much to be said in favour of Coquillett's selection. But what was *L. palustris* of Desvoidy? One naturally accepts the fact that it must have been a species answering to Desvoidy's generic definition, and in this definition he calls attention to a somewhat prominent "epistoma"—a term by which he indicated the front mouth edge; to the fact that the dark abdominal markings in the female are as large as in the male; and to the colour of the species being "brunneo-cinerei." The first two characters apply only to species of the division with base of the cubital vein and prosternal plate setose, and the colour supports the same conclusion. One is therefore almost certainly correct in considering *L. palustris* to be a species allied to *L. maculosa*, and in retaining the name *Limnophora* for a part of Division II. It is interesting to note that though Schnabl did not recognize the essential characters of the group, his limitation of the use of the name *Limnophora* is almost the same as that now proposed.

GYMNODIA Dsv. (1863), with type *pratensis* Dsv.=*polystigma* Mg., belongs to Division I. The upcurved cubital vein led Desvoidy to place the genus next to *Graphomyia*, with which it really has no relationship. The synonymy of the type-species is generally accepted as correct, though Desvoidy's characterization of the genus was "Caractères des Graphomyes; Chête nu" and under *Graphomyia* he called attention to the hairy eyes, leading one to infer that his *Gymnodia* also had hairy eyes, whereas the eyes of *polystigma* are bare.

MELANOCHELIA Rond. (1866), with type *surda* Rond. (*nec* Zett.) =*exsurda* Pand., belongs to Division II.

BRONTAEA Kow. (1873), with type *polystigma* Mg., belongs to Division I. and is a synonym of *Gymnodia*.

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A MONTHLY ILLUSTRATED JOURNAL OF

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THE MUSEUM, HULL;

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The Annual Subscription for 1921 is 15/-.

Third Series. No. 77.]
[No. 684.]

MAY, 1921

[PRICE 2/- NET.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LVII.

MAY 17 1921

[THIRD SERIES—VOL. LVII.]

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The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

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Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.—This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

PSEUDOLIMNOPHORA Strobl (1893).—No type indicated by the author, but *triangula* Fln. may well be considered as such. Belongs to Division II.

STROBLIA Pokorný (1893), with type *triangula* Fln., is an absolute synonym of *Pseudolimnophora*.

CALLIOPHRYX Kow. (1893), with type *ripuria* Fln., belongs to Group II.

NEOLIMNOPHORA Schnabl (1902), with type *maritima* v. Röd. This name applies to a small group in Division I, which differs from all the other groups of that division in having the prosternum hairy. Attention may here be called to the fact that in a "Korringenda," published on the wrapper of a subsequent "Heft" of the Zeitschr. f. Hymen. und Dipt. (1902), Schnabl, having come to the conclusion that the male and female of his description were not conspecific, gave the name of *N. schnusei*, n. sp., to the female, quoted this as the type of the genus, and made various emendations to his description. There can be no doubt that this new name of Schnabl's was unnecessary, and that his *N. schnusei* was only the female of *maritima*; while the fact that he makes no mention of *N. schnusei* in his subsequent writings appears to indicate that he became aware of his error.

VILLENEUVIA Schnabl & Dziedzicki (1911), Nova Acta, xcv, p. 148. Type *aestuum* Villen. belongs to Division I.

SPILOGONA Schnabl & Dziedzicki (1911), Nova Acta, xcv, p. 152. No type indicated by the authors, but *L. compuncta* (Wied.) Zett., may be taken as such. This is the largest group of Division I.

LIMNOPHORITES Schnabl & Dziedzicki (1911), Nova Acta, xcv, p. 151. Type *L. setinerva* Schnbl. & Dzied. belongs to Division II.

These suggested subdivisions of the British species of *Limnophora* may be tabulated as follows:—

- 1 (8) Cubital vein absolutely bare, even on nodose junction with radial vein.
- 2 (7) Prosternum bare.
- 3 (6) Head in profile with the frons, facial orbits and jowls conspicuously evident. Eyes in male very seldom nearly touching on frons, and, when so, the frontal bristles continuous very nearly to ocellar triangle.
- 4 (5) Face longer and flatter. Head from in front showing vibrissal angles nearer mouth-edge and not so approximated.
....*Spilogona* Schnbl. Species 1-16.
- 5 (4) Face short and very concave. Head from in front showing vibrissal angles some little distance above mouth-edge and distinctly approximated.*Villeneuveia* Schnbl. Species 17.

- 6 (3) Head in profile almost entirely composed of the compound eye. The rounded front of frons and narrow jowls just visible, the very narrow facial orbits almost quite hidden. Eyes in male practically touching on frons, and the frontal bristles absent for the whole distance where the eyes are so approximated.
 *Gymnodia* Dsv. Species 18.
 *Brontaeu* Kow.
- 7 (2) Prosternum hairy at sides. Frons wide in both sexes, with extremely wide orbits. Inter-frontalia of female very long and wide. Frontalia in both sexes, if present, very narrow or only linear.
 *Neolimnophora* Schnbl. Species 19, 20.
- 8 (1) Cubital vein with minute bristles at least on nodose junction with radial vein, and prosternum also with minute bristles or hairs on each side margin.
- 9 (12) Frons in profile more convex and sloping, the angle made with the face greater than a right angle.
- 10 (11) *Coencsia*-like species with frons equally wide and with distinct vertical bristles in both sexes. ... *Pseudolimnophora* Strobl. Species 21, 22.
 *Stroblia* Pok.
- 11 (10) Frons in the male much narrower than in the female, and without distinct vertical bristles. *Limnophora* Dsv. Species 23-27.
 *Melanochelia* Rond.
 *Limnophorites* S. & D.
- 12 (9) Frons in profile flat and almost horizontal, the angle made with the face practically a right angle; base of antennae nearly level with upper margin of eyes; face and antennae long.
 *Calliophrys* Kow. Species 28, 29.

The subdivisions are undoubtedly natural groups, and at least the first four will, in all probability, some day be granted full generic rank. The better course for the present, however, would appear to be to treat them as subgenera; this, by calling attention to their existence, will give them a chance of being tested in application to a more extended fauna than that upon which they have been founded.

The first four subgenera, which constitute Division I as indicated above, are certainly more easily differentiated than those in Division II. They may be more fully characterized as follows:—

Spilogona.—Face flat, with front mouth-edge only rarely produced, and consequently underside of head unusually short. Eyes of male never so widely separated as in *Villeneuveia*. Arista much longer than 3rd antennal joint. Sexual dichroism usually very marked. Aerostichal bristles hair-like and multiserial, very seldom somewhat stronger and biserial. Three or four pairs of post-sutural dorso-central bristles. Legs strongly bristled, several bristles on shaft of posterior tibiae and usually a pair of preapical bristles to all tibiae. Discal and cubital veins diverging, or at most parallel towards tip of wing.

Villeneuveia.—The shape of the head and especially the face easily distinguishes this subgenus. The head is markedly dichoptic in the male, with a wide frontalia. Frontal row of bristles in the female with the upper one or two pairs not reclinate or retro-divaricate as is usually the case. Arista short, very little longer than third antennal joint. Sexual dichroism—as usual throughout this division—very marked, the females being lighter in colour than the males. Four pairs of post-sutural dorso-central bristles; two to three pairs of strongly-developed laterally approximated presutural acrostichal bristles, and numerous other minute bristles between the rows of dorso-centrals. Chaetotaxy of legs as in *Spilogona*, but bristles not so strongly developed. Cubital and discal veins diverging towards tip of wing.

Gymnodia.—Distinguished by the shape of the head, especially by the narrow facial orbits about the middle being flattened in the same plane as the face, and consequently practically invisible in profile. Eyes large and deep, closely approximated on frons in male and occupying almost the whole of the head in profile. Frontal bristles absent on the whole of the narrowest part of frons (about half its length). Jowls narrow. Frontal prominence rounded, and only narrowly visible in profile in the male. Sexual dichroism considerable. Acrostichal bristles irregularly quadriserial, the outer rows composed of stronger, more regular, bristles, and no tiny hairs between these rows and the dorso-centrals. Four pairs of post-sutural dorso-central bristles. Legs slender and sparingly bristled, much as in Division II (one bristle behind middle tibiae, one antero-ventral and one antero-dorsal bristle on hind tibiae), only one preapical bristle to all tibiae. Cubital and discal veins converging towards tip of wing, often (in non-British species) with the discal vein markedly upcurved towards the tip.

Neolimnophora.—Eyes small, widely separated on frons in both sexes. Frontal orbits very wide in both sexes; frontalia linear or even completely hidden; inter-frontalia in the female very broad and long, reaching to front of frons. Facial orbits and jowls exceptionally wide. Face very short and concave. Antennae and arista both very short. Sexual dichroism very slight. Prosternal plate between front coxae with a row of short bristly hairs on each side. Chaetotaxy of legs as in *Gymnodia* and Division II. Cubital and discal veins somewhat converging towards tip of wing.

The three subgenera included under Division II are more difficult to differentiate from each other (especially in the females) than are those under Division I, and have many characters in common, in addition

to those given in the Table under S (1). For instance, the front mouth-edge is always to a greater or less extent produced, with the lower part of face concave; there are never any upcurved bristles on the jowls, but an even and rather dense single row of bristles along the sides of mouth-opening, the other pubescence on the jowls being short. The proboscis is always slender and polished black. The middle legs are distinctly longest, and all are weakly bristled with only one preapical bristle to all tibiae, seldom more than one bristle behind middle tibiae, and only one antero-dorsal bristle on hind tibiae. The cubital and discal veins often converge towards the tip. Finally, sexual dichroism is very little evident, the females more resembling the males in coloration and markings than in the majority of species under Division I. The males of *Pseudolimmophora* differ from those of *Limmophora* sens. strict. in having the frons almost or quite as wide as in the females and with a similar arrangement of the bristles; particularly the two upper bristles of each row point backwards and slightly outwards, as in the females.

(To be continued.)

CATHORMIOCERUS ATTAPHILUS BRIS.:
AN ADDITION TO THE BRITISH COLEOPTERA.

BY J. H. KEYS, F.E.S.

PLATE I.

Cathormiocerus attaphilus was originally described by Ch. Brisout in Ann. Soc. Ent. Fr. 1880, p. 233, and Bull. p. xxiv, as follows:—

“Oblongo-ovatus, opaco-squamosus, thorace subelongato, lateribus rotundato, scrobe lineari ad oculos descendente, scapo* basile fortiter subangulato curvato, funiculo crasso, elytris breviter cinereo-hispidis. Long. 3·2 à 4·2 mill.”

The following is a free translation of the description in French:—

Body clothed with rather flat rounded scales and semi-erect club-like setae. Head and rostrum with very close puncturation, the latter gradually narrowed to the apex, depressed, with central longitudinal furrow; scape thickened at apex and thence gradually thinner to base, and arched between the latter and the middle; funiculus thick, the joints transverse from the third onward, the first conical, somewhat widened on the inner side, the second almost as long as broad. Thorax a little longer than wide, truncate at apex, slightly rounded behind, and rather strongly so at sides; punctured like the head. Elytra ovate, more than half as wide again as the thorax, rather depressed on disk; finely punctate-striate; interstices each with a series of ashy, semi-erect, club-shaped setae. Legs fairly robust, with tarsal claws free. Second ventral segment

* On p. xxiv of the Bulletin, 1880, “scapo basile” was given as “scapo basi gracili.”



C. SOCIUS Boh. ♀

× 8



× 16

C. SOCIUS - Head.



C. ATTAPHILUS Bris. ♀

× 8



× 16

C. ATTAPHILUS Head.



C. MARITIMUS Rye. ♀

× 8



× 16

C. MARITIMUS - Head.

BRITISH SPECIES OF CATHORMIOCERUS.



angularly arched forwards. . . . We have found, with M. le docteur Marmottan and M. Lemoro, at Belle-Ile-en Mer, a score of specimens of this insect, under low plants, around the nests of *Atta barbara*, in company with more than 150 *Cathormioceris curvipes*.

Males of the genus appear to be difficult to obtain; the females of the British species, however, may be distinguished by the formation of their antennae. Our three British species may be tabulated thus:—

- I. Scape club-shaped, slender at base and thence gradually thickened to apex; funiculus stout with joints 3 to 7 transverse *attaphilus* Bris.
- II. Scape suddenly thickened from very near point of articulation with scrobes, and thence almost equally thick to apex.
 - a. Antennae more slender, first two joints of funiculus longer, the second joint half as long again as broad, distinctly narrowed from its middle to base *socius* Boh.
 - aa. Antennae thicker, first two joints of funiculus shorter, the second joint about one-fifth longer than broad and proportionately thicker at base *maritimus* Rye.

The build of the funiculus of *maritimus* rather closely approaches that of *attaphilus*, but is much less robust, with the apex of first joint less wide and second and third joints longer. The thick scape of *maritimus* is, however, quite distinctive.

Compared with *socius* and *maritimus* the elytral interstices of *attaphilus* are flatter, with the striae rather more sharply cut. Viewed with a half-inch objective the elytral scales will be seen to be more strongly striated and the outlines of the scales considerably more distinct than in the other two species.

The first British specimen of *attaphilus* was found at the Lizard, in July 1917, by my friend Mr. N. Micklewood. In June 1919, a single example was captured by myself by sweeping on the slopes above the cliffs, and in June 1920 another was obtained by searching at roots of low plants in the same district. On the two latter occasions, in conjunction with Mr. Micklewood, considerable attention was devoted to the quest for this insect, but no more could be seen. All three specimens are females. On the last-named date we also caught 17 *C. maritimus*, of which 15 proved to be females—the two others were given away unexamined—and 66 *Trachyploeus myrmecophilus* Seidl., all of which are females.

I have also examined 11 examples of *C. socius* from the Isle of Wight in my collection with similar result. In view of Dr. Sharp's notes on "Gynarchy in *Coleoptera*" in this Magazine (1918, pp. 154, etc.) these facts seem worth noting.

The determination of the identity of *C. attaphilus* as an addition to the British Fauna is entirely due to Mr. G. C. Champion, who, after naming the insect from Brisout's description was able to verify it by comparison with an authentic French example, and I desire to express my sincere thanks to him for the immense amount of trouble involved.

An apology must be made for the indifferent quality of the illustrations, the result of the half-tone engraver touching up the antennae, etc., after getting into some trouble with the photographs. But poor as they are, doubtless they may be of some general help in the identification of the species, all three of which, with an enlarged figure of the head and antennae of each, are shown on the Plate.

7 Whimble Street, Plymouth.

March 1921.

ON A SECOND BRITISH SPECIES OF *PRIOBIMUM*: *P. KIESENWETTERI*,
NOM. NOV. = *TRICOLOR* KIESW. (NEC OL., NEC MULS.).

BY JAMES EDWARDS, F.E.S.

There exists in East Gloucestershire a species of *Priobium* distinguished from the one we are accustomed to call *castaneum* F. by its larger size, more pronounced alteration of direction in the outline of the sides of the pronotum beyond the middle in the strictly dorsal aspect, and the elevation beyond the remainder of the 3rd, 5th, and 7th interstices. By "dorsal aspect" is meant the view obtained when the pronotum is seen along an optical axis at right angles to the central point of its disc; for purposes of comparison it is very important that the circumstances of observation should be precisely similar. There can be no reasonable doubt that this is the *P. tricolor* OL. of Kiesenwetter (Ins. Deutschl. v. p. 96, 1898); but Olivier's original description, for which I am indebted to Mr. Champion, contains no reference to the characters by which Kiesenwetter distinguishes his *tricolor*, and I therefore propose the name *kiesenwetteri* in place of *tricolor* OL., Kies.

A good deal has been written about the European species of this genus, but the result is far from satisfactory. This arises in great measure from the fact that the writers in selecting characters which they regard as distinctive, have not paid due attention to normal variability and the differences between the sexes. The difference in the apex of the elytra in the two sexes, obliquely truncate in the males and separately rounded in the females, and the relatively greater length of the last three antennal segments in the male, were known to Mulsant (Térédiles,

p. 55, 1864), but the fact that the length of the third antennal segment in proportion to the fourth is normally greater in the female than in the male he does not notice. Everts (Col. Neerl. 1901) pointed out that the pronotum is relatively narrower in the male than in the female.

The most striking character of *P. kiesenwetteri*, the elevation of the alternate interstices, does not reach its full development in all specimens. This circumstance was noticed by Kiesenwetter, who expressed the opinion that abundant material from different localities might possibly prove that *P. castaneum*, which he ascribes to Olivier, and his *P. tricolor* Ol. were only "ab-arten" of the same species. I think that the insects in question represent two distinct natural categories whose occurrence in England it is worth while to record. Kiesenwetter's reference under his *P. tricolor* to Mulsant's description of *P. tricolor* is not easy to understand; because the latter distinctly says that his *P. tricolor* is an insect having the 3rd and 7th interstices a little more raised *at the base* than the others; this is often true of our *castaneum*, but is a very different thing from the raising of the 3rd, 5th, and 7th interstices throughout their length which obtains in typical *kiesenwetteri*. It would appear that Mulsant's *tricolor*, *castaneum*, and *planum* are all what we call *castaneum* F. With the exception of the expression "écusson transversal," which he subsequently modifies to "écusson légèrement transversal," there is nothing in Mulsant's description of *planum* which does not equally apply to our *castaneum*.

Seidlitz (Fauna Baltica, 1891) treats of all the four kinds of *Priobium* admitted in Cat. Col. Eur. 1906. He divides them into two sections, of which the first consists of insects having the pronotum twice as wide as the head, little narrower than the elytra with very strong (nearly angularly) rounded sides, and the elytra separately rounded at the apex. This contains *castaneum* F. with the 3rd antennal segment little longer than the 4th, and *eichhoffi* with the 3rd antennal segment nearly twice as long as the 4th. I have not seen any *Priobium* of which it could be said that the pronotum was twice as wide as the head. His second section, in which the pronotum is not, or little, wider than the head, comprises *tricolor* Ol. with the scutellum as long as broad, and *planum* F. having the scutellum broader than long. Our common British species therefore falls into his second section, and since its scutellum is at least as long as wide, it should, according to Seidlitz, be called *tricolor* Ol.; but this change is unnecessary, because Olivier's description of *tricolor* affords no means of distinguishing his insect from the prior *castaneum*.

Reitter (Faun. Germ. iii, p. 308, 1911) deals with the same four

species in much the same way, but uses the name *excaratum* Kug. instead of *castaneum*.

P. kiesenwetteri in its best-marked form might be roughly described as a *Prionium* of the size and build of *Xestobium tessellatum* (my example is 7 mm. long) and having interstices 3, 5, and 7, in certain aspects, paler than the rest. I found one female example, dead, under bark of beech at Standish Park near Painswick, September 7th, 1920, and Mr. W. B. Davis of Stroud has another, which I have seen, taken on an old willow, May 18th, 1918, at a place about three miles south of Standish Park. I have not seen a British male; but a specimen of that sex, 4.5 mm. long, named *tricolor* Ol. by Schilsky for Mr. Champion, taken by the latter at 4,400 feet on the Mendel Pass, Austrian Tyrol, agrees with *kiesenwetteri* in the sudden contraction of the sides of the pronotum near the apical third, although the raising of the alternate interstices is very little marked.

The female of *P. castaneum* appears to be much less common than the male; out of a dozen specimens from Norfolk and Gloucestershire I do not possess one. I had put several examples aside as females on account of their somewhat larger size and more strongly curved sides of the pronotum, but these all prove on dissection to be males. Mr. Champion, however, has been good enough to send me undoubted females taken by himself in the New Forest.

Colesborne.

February 9th, 1921.

SOME INDIAN COLEOPTERA (5).

BY G. C. CHAMPION, F.Z.S.

(Continued from p. 78.)

Hypebaeus sulcicauda, n. sp.

♂. Moderately elongate, narrow, finely pubescent, shining; black, the head (except at the base), antennae, prothorax, and legs (the infusate tibiae excepted) testaceous, the elytra obscure bluish-green, each with an indeterminate oblong testaceous spot near the suture before the tip; head and prothorax almost smooth, the elytra densely punctulate. Head nearly as wide as the prothorax, the eyes rather large; antennae moderately long, feebly serrate from the fourth joint onward. Prothorax convex, transverse, rounded at the sides. Elytra moderately long, depressed, gradually widened posteriorly, conjointly rounded at the tip; with a common, small, triangular depression on the suture just before the apex, the apex itself somewhat explanate and also deeply sulcate within. Legs slender; posterior tibiae slightly curved, sinuate within.

Length 2 mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*).

One male. Near *H. albocaudatus* (♂), but with metallic and more distinctly punctured elytra, the apices of which are very differently haped, the antennae less elongate.

Hypebaeus quadrisignatus, n. sp.

♀. Elongate, much widened posteriorly, sparsely pubescent, shining; black, the head, antennae, prothorax (a patch on the disc excepted), and legs (the bases of the femora, and the posterior tibiae in part, excepted) testaceous; the elytra with the suture from a little below the base, the apex, an oblique, triangular mark below the base (nearly reaching the sutural streak and extending downwards at the sides), and an oblique, angulate, forwardly-directed streak on the disc towards the apex, also testaceous; the head and prothorax sparsely, extremely minutely, the elytra densely, distinctly, punctate. Head barely as wide as the prothorax; antennae not very slender, moderately long, serrate from joint 4 onward. Prothorax transverse, convex, rounded at the sides. Elytra flattened, elongate-subtriangular, much wider at the base than the prothorax. Legs slender; posterior tibiae somewhat bowed at the apex.

Length $2\frac{1}{10}$ mm.

Hab. Ranikhet Division of Kumaon (*H. G. C.*).

One specimen, provisionally referred to *Hypebaeus* in the absence of the ♂. The black elytra, with the suture from near the base, the apex, and two oblique streaks on the disc of each testaceous; the sutural stripe is slightly dilated anteriorly and nearly joins the first streak on the disc.

Hypebaeus spinicornis, sp. n.

♂. Moderately elongate, narrow, parallel-sided, sparsely, very finely pubescent, shining; testaceous, the head black at the base and white in front; the elytra with a common, broad, subtriangular space at the base (reaching the humeri) and a broad oblong patch beyond the middle (nearly reaching the suture and outer margin), and the under surface in great part, black; head and prothorax almost smooth, the elytra obsoletely punctulate. Head as wide as the prothorax, the eyes rather large; antennae (fig. 1) long, joints 2 and 3 short, moniliform, equal, 4 greatly thickened, ear-like, angularly dilated and bearing a rather long slender tooth within, 5 transverse, toothed within, 6-10 subtriangular, 11 elongate. Prothorax convex, transverse, rounded at the sides. Elytra long, subparallel, simply rounded and not excavate at the tip. Legs very slender: posterior tibiae slightly curved.

♀. Antennae shorter, simple and more slender; head black; elytra widened and more convex posteriorly.

Length $1\frac{1}{2}$ -2 mm. (♂ ♀.)

Hab. W. Almora [♂ ♀ : v.1917, iv.1918] and Ranikhet Divisions of Kumaon (*H. G. C.*).

Four males and three females, the description being taken from a pair captured on the same date. The ♂ has one of the antennal joints dilated somewhat as in *Laius* and *Myrmecodes*, and the elytra simple. The ♀ is separable from the same sex of the allied forms by the wholly black head. In one ♂ the whitish space on the front of the head is depressed, but this is due to immaturity.

Hypebaeus cerastes, n. sp.

♂. Very like *H. spinicornis*; the head larger and broader, wider than the prothorax, slightly hollowed between the eyes, whitish, with a transverse curved blackish line between the eyes behind; antennae (fig. 2) with joint 1 very broad, compressed, curved upwards and horn-like at the apex, joint 2 articulated to it at about the middle of the apical margin, 2 small, shorter than 3, 4-10 serrate; the elytra with a common heart-shaped scutellar patch and a very broad, complete, subapical fascia, black, simply rounded at the tip; the posterior tibiae straighter.

♀. Head smaller than in ♂, not wider than the prothorax, the dark basal portion a little shorter; antennae as in *H. spinicornis*; the black subapical fascia reduced to a large oval patch on the disc of each elytron.

Length $1\frac{2}{3}$ mm. (♂ ♀.)

Hab. S. Garhwal, alt. 6500 [♂], and W. Bhatkot, alt. 4000 ft., both in Kumaon (*H. G. C.*).

One pair. Extremely like *H. spinicornis*, but with very differently formed ♂-antennae, joint 1 resembling a curved compressed horn when viewed in profile. The broad head in the same sex is suggestive of that of *Troglops*.

Attalus bengalensis.

♀. *Attalus bengalensis* et var. *violaceipennis* Pic, L'Echange, xxiii, p. 171 (1907).

"Robustus et sat latus, post medium dilatatus, nitidus, griseo-pubescentibus, rufo-testaceus, oculis, pectore, femoribus 4-posticis pro parte nigris, elytris viridi-caeruleis. Long. 6 mm." [type].

♂. Anterior tarsal joint 2 produced at the apex above into a long spur-like process which nearly reaches the tip of the following joint; posterior tibiae (fig. 3) very broadly, subangularly dilated externally towards the apex, the dilated portion longitudinally excavate above, strongly hooked at tip, and with a truncated projection at about the middle behind.

Hab. Bengal [type of Pic], Murree [var. *violaceipennis*: ♀]; Pindar Valley, Almora, alt. 8000-11,000 ft. (*H. G. C.*: ♂ ♀); "E. India" (*Capt. Boys*, in *Mus. Oxon.*: ♀, var.); India (ex coll. *Bowring*, in *Mus. Brit.*: ♀, var.).

Eight specimens of this species are contained in the collections before me, including one ♂, which has an extraordinary dilatation of the posterior tibiae. The legs vary in colour, the intermediate and posterior pairs being almost wholly black in the ♂, and all three pairs testaceous in the named variety. The head is rather short. The membranous lobe at the base of the tarsal claws is quite small.

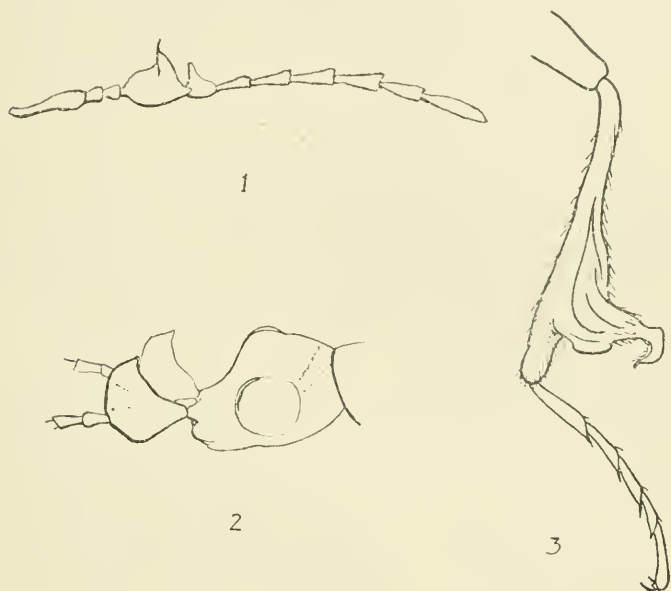


Fig. 1. *Hypebaeus spinicornis*, n. sp., ♂, antenna.

2. „ *cerastes*, n. sp., ♂, head and basal joints of the antennae in profile.

3. *Attalus bengalensis* Pic, ♂, posterior tibia.

Incisomalachius notaticeps.

♂. *Incisomalachius notaticeps* Pic, L'Echange, xxx, p. 15 (1914).

♂. Anterior half of the head testaceous; anterior tarsal joints 1 and 2 produced into a dentiform projection at their inner apical angle; prothorax with the sides hollowed and abruptly emarginate from near the base to the apex, and bearing a non-retractile, sinuately-plicate, ear-like expansion, which is thickly clothed with long, matted, silky hairs.

♀. Head black to the anterior margin, the ante-ocular portions only testaceous; antennae shorter; prothorax transverse, rounded-subquadrate, simple.

Length (to tip of elytra) 2 $\frac{4}{5}$ –3 mm. (♂ ♀.)

Hab. Kulu, Himalaya (*type of* Pic: ♂), W. Almora Division of

Kumron (*H. G. C.*: vii.1919: ♂ ♀), "E. India" (*Capt. Boys*, in *Mus. Oxon.*: ♂).

Three males and one female, evidently referable to the species named by Pic. who gives the length as 4 mm. A monotypic genus, based like many other genera of Malachiids upon ♂-characters only, the ♀ having the general appearance of an *Attalus*. The elytra are blue and rather strongly punctured; the prothorax, anterior legs, and the other femora in part, testaceous; and the head, except in front in ♂, and the rest of the legs, black.

MALACHIOMIMUS, n. gen.

Head short, simple in ♂, the epistoma broad, the labrum exposed; antennae widely separated at base, inserted towards the sides of the head at a little before the eyes, 11-jointed, ramose in ♂, serrate in ♀; eyes very large in *M. latifrons*, much smaller in *M. luteipes*; terminal joint of maxillary palpi slender, subacuminate at tip; elytra simple in the two sexes; anterior tarsi of ♂ 5-jointed, joints 1 and 2 thickened, 2 extending over 3 above; tarsal claws with membranous lobe.

Type, *M. latifrons*.

The type of this genus is a metallic Indian insect with extremely large eyes in ♂, two others are known as yet from ♀ ♀ only, and a fourth is provisionally referred to it. It agrees with *Attalus* and *Arinotarsus* in the form of the ♂ anterior tarsi (joints 1 and 2 being quite simple in *Malachius*), and, owing to the short, broad head, the antennae are widely separated at the base and inserted at a little in front of the eyes. *Attalus banghuasi* Pic (1907) and *A. impressifrons* Pic (1917), both from India, are described as having the antennae flabellate in ♂, and they may be allied to the insects here included under *Malachiomimus*; the author, however, says nothing about the enlarged eyes, etc.

Malachiomimus latifrons, n. sp.

Elongate, widened posteriorly, brilliant metallic blue or bluish-green, the basal joints of the antennae externally, the anterior tarsi of ♂ in part, and the labrum, testaceous; clothed, the legs included, with long, fine, erect or projecting hairs intermixed with scattered decumbent pubescence; the head and prothorax very sparsely, extremely minutely punctured, the elytra somewhat rugulose and closely, finely punctate. Head broad, slightly hollowed in the middle anteriorly in ♂, bi-impressed in front in ♀; eyes extremely large and prominent in ♂, a little smaller and less convex in ♀; antennae (♂) long, ramose from joint 5 onward, the rami slender, pilose, rapidly increasing in length, 3 and 4 dentate within, (♀) short, simply serrate from joint 4 onward. Prothorax transverse, somewhat rounded and sharply margined at the sides, slightly narrowed anteriorly. Elytra long, broader than the prothorax,

widening from the base, rounded at the tip. Legs slender; anterior tarsal joints 1 and 2 rather long and stout, 2 with a black-tipped, claw-like extension above.

Length 4-5½ mm. (♂ ♀.)

Hab. INDIA (ex coll. *Bowring*, in *Mus. Brit.*, ♀; and ex coll. *Boys*, in *Mus. Oxon.*: ♂); West Bhatkot, alt. 4000 ft., Ranikhet Division of Kumaon (*H. G. C.*: viii.1917, v.1920: ♂ ♀).

Two ♂♂ and two ♀♀, the pair from Kumaon [types] much smaller than the others. The extremely large eyes and the shallowly impressed head should separate the ♂ from the same sex of *Attalus banghaasi* Pic, the ♀ of which has the head yellow in front.

Malachiomimus nigripilis, n. sp.

♀. Elongate, subparallel-sided, slightly widened posteriorly, shining, thickly clothed, the legs included with long, erect, blackish hairs intermixed with decumbent pubescence; cyaneous, the head and prothorax green, the antennae (the testaceo-maculate basal joints excepted) and legs black, the labrum testaceous; the head and prothorax very sparsely, minutely, the elytra closely, finely, punctured. Head broad, transversely depressed and shallowly trifoveate between the eyes, the latter large; antennae moderately long, sharply serrate (subpectinate) from joint 5 onward. Prothorax strongly transverse, scarcely narrower in front than at the base. Elytra long, gradually widened from the base, blunt at the tip.

Length 4½ mm.

Hab. India (ex coll. *Bowring*, in *Mus. Brit.*).

One female. The subparallel shape, relatively broader prothorax, and subtruncate elytra, separate *M. nigripilis* from *M. latifrons*, ♀. The present insect has the general facies of a *Malachius*.

Malachiomimus luteipes, n. sp.

♀. Extremely like the smaller examples of *M. latifrons*; bluish-green or brassy-green with the head and prothorax tinted with cupreous in one specimen, the basal joints of the antennae externally, the palpi (the infusate terminal joint excepted), labrum, and legs (the infusate posterior tarsi excepted) testaceous, the rest of the antennae piceous; thickly clothed (the legs included) with long, erect hairs intermixed with fine scattered pallid pubescence; the head and prothorax very sparsely, minutely, the elytra densely, finely punctate. Head with a rather deep frontal suture, bi-impressed in front; eyes much smaller, and the antennae shorter, than in *M. latifrons*, the elytra more densely punctured, the pilosity (in consequence) more abundant.

Length 3¾-4 mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*: iii.1918).

Two females, one completely abraded. Separable at once from *M. latifrons* and *M. nigripilis*, ♀, by the testaceous legs and much smaller eyes.

Hedybius (?) *cristatus*, n. sp.*

♂. Moderately elongate, shining, clothed with whitish pubescence, intermixed with long, erect, black hairs; black, the antennal joints 1-3 on their outer edge, and the apices of the anterior and intermediate tibiae, testaceous, the elytra violaceous; closely, minutely, the elytra much more distinctly punctate. Head short, about as wide as the prothorax, very deeply, sharply, triangularly excavate in the middle, and with a stout, matted, tuft of curled hairs in the centre in front, the eyes prominent, moderately large; antennae rather elongate, strongly pectinate. Prothorax transverse, convex, narrowly margined, rounded at the sides. Elytra parallel, slightly wider than the prothorax, moderately long. Legs hairy; anterior tarsal joint 2 with a long claw-like extension above, which nearly reaches the apex of 3.

Length $3\frac{1}{4}$ mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*: iii.1917).

One male, somewhat doubtfully referred to the genus *Hedybius*, differing from *Malachiomimus latifrons* (♂) in having comparatively small eyes, strongly pectinate antennae, a triangularly excavate, cristate head, parallel elytra, etc. *H. cristatus* could not very well be included under *Attalus*, even in the wide sense; the two Indian *Attali* noted above must be nearly allied to it.

(To be continued.)

AN ABERRANT GENUS OF *GEOCORINÆ*.

BY DR. E. BERGROTH, C.M.Z.S.

My friend, Mr. E. A. Butler, has sent me several specimens of a small bug, the systematic place of which he was unable to determine. It was found by Mr. T. V. Campbell at the roots of grasses at Chikka-ballapura, not far from Bangalore, in South India, and he writes to say that "it works its way along the ground like a small mouse." A microscopical examination of its characters shows that this insect should be referred to the subfamily *Geocorinae*, fam. *Myodochidae*. It differs, however, from that family in the absence of ocelli and in the two-jointed tarsi, but the ocelli are missing in many other *Myodochidae* with undeveloped membrane, and as two-jointed tarsi are found also in many *Pentatomidae* and in some *Reduviidae*, we must be prepared for the fact that they in exceptional cases can be met with in other families with

* Enumerated under the name *Malachiomimus* (?) *cristatus*, ante, p. 71; it would be better placed under *Hedybius* for the present.

normally three-jointed tarsi. Anomalous as it is, the new genus here described is not, however, quite isolated. Under the name *Psammium mica* Breddin* has described (from S. W. Africa) a new genus and species, which he placed in the *Geocorinae*, and which is clearly allied to the genus found by Mr. Campbell. *Psammium* is said to resemble "a lump of cohering grains of sand," and it is still more aberrant than the Indian genus, which at first sight has the general appearance of a small weevil.

SYMPEPLUS, nov. gen.

(συμπεπλος = with fused tegmina.)

Corpus piriforme. Caput transversum, pronoto longius et basi hujus paullo angustius, ante oculos in spinam porrectam et apice in processum conicum productum, sulco clypeali destitutum sed utrinque linea impressa percurrente intralaterali (saepe crusta tecta et tunc parum visibili) instructum, oculis sessilibus, a supero visis leviter obliquis, fere reniformibus, angulos apicales pronoti tangentibus, orbita post medium sinuata, ocellis nullis, antennis inter processum apicalem et spinam lateralem inferne insertis, capite parum longioribus, articulo primo ceteris robustiore, apicem capitis levissime superante, inter omnes longissimo, secundo brevissimo, bucculis percurrentibus, linearibus, rostro coxas medias attingente, articulo primo medium gulae paulum superante. Pronotum multo latius quam longius, in transversum sat fortiter, in longitudinem minus convexum, angulis leviter rotundatis, marginibus apicali et lateralibus subrectis, basali levissime rotundato vel fere recto, areis cicatricialibus in axi longitudinali corporis jacentibus, late distantibus, angustis, leviter sigmoideis, impressis sed crusta albida repletis, inter se impressione transversa conjunctis. Scutellum fortiter transversum, triangulare, apice carina brevi instructum. Elytra in transversum et in longitudinem valde et quam venter magis convexa, abdomen totum tegentia, tota coriacea, membrana destituta, per totam longitudinem concreta, commissuram carinatum formantia, clavo cum corio etiam coalito, saepe (non semper) loco suturae carini tenui vel vestigio ejus instructo. Anguli postici metasterni acutiusculi; orificia brevia, subtilia. Abdomen subtus in transversum sat fortiter convexum. Pedes modice distantes, breviusculi, simplices, tarsi bi-articulati, articulo secundo longiore.

Seen in profile the upper curve of the body is not continuous, there being a very distinct impression between the elytra (and scutellum) and the pronotum, and a less pronounced impression between the pronotum and the head. In nearly all the specimens seen the elytra are considerably raised above the level of the pronotum, only the smallest male having the former scarcely higher than the latter. When the faint keel indicating the place where the claval suture should be is present, it reaches the middle of the elytral commissure.

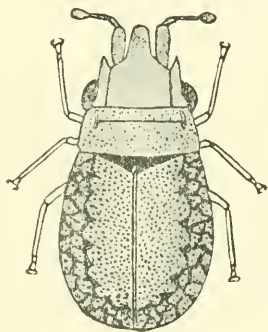
This genus has all the more important characters in common with *Psammium* Bredd., but the latter has shortly stylated eyes, a strongly

* Derkschr. Nat. Ges. Jena, xvii, p. 68 (1913).—In the "Zool. Record" and other bibliographic works this paper (*i.e.* pp. 47-88) will be found under the name F. Schumacher, as the latter (who in the preface speaks of his "Pietät" towards Breddin) has chosen to place himself alone on the title-page as the author of the paper. As a matter of fact it is a posthumous paper of Breddin's, in which only the few Cicadae and 6 out of the 23 new Heteroptera are described by Schumacher.

elevated uneven protuberance behind the clypeus, a high 4- or 5-lobed percurrent hump bearing a smooth median keel in the centre of the basally slightly sinuate pronotum, and each elytron furnished with numerous tubercles arranged in three oblique curved rows and a fourth row of lower tubercles on the costal margin. Moreover, the upper surface of *Psammium* is in part clothed with close-set, broad, silvery scales. I think there can be no doubt that these two genera are really apterous. I have in vain tried to disconnect the elytra of *Sympeplus*; they are completely coalesced down their whole length.

SYMPEPLUS CURCULIUNCULUS, n. sp.

Glaber, opacus; supra flavo-testaceus, capite et scutello fere semper nigris, illo lateribus tenuiter albido-incrustato, carinula apicali scutelli albida, limbo lato costali elytrorum fusco-reticulato; subtus niger, capite, limbo antico et margine laterali pectoris, parte laterali basis ventris hujusque margine laterali albo-incrustatis; rostrum nigrum; antennae et pedes obscure testacea, articulo primo illarum femoribusque infuscatis. Caput supra dense et minute subcon-



fluenter punctulatum, articulo tertio antenarum secundo vix duplo longiore, lineari, quarto tertio paullo brevior, fusiformi. Pronotum dense punctulatum. Scutellum subtiliter punctulatum. Elytra dense sed quam pronotum fortius punctata. Abdomen subtus dense punctulatum, segmento genitali maris rotundato, convexo, punctulato, segmentis duobus ultimis ventralibus conjunctis medio subaeque longo, segmento ultimo ventrali feminae (vaginam includente) segmentis duobus praecedentibus unitis medio distincte longiore.

Long. ♂ 1.7-1.9 mm., ♀ 2-2.2 mm.

Hab. S. INDIA, Chikkaballapura (*T. V. Campbell*).

The reticulate fuscous lateral markings of the elytra are sometimes reduced to two rows of fuscous spots.

Bredden says nothing of the tarsi in *Psammium*, but I think there can be no doubt that they are two-jointed.

The *Geocorinae* should be divided into two groups with the following characters.

GEOCORINI: Ocelli adsunt, saltem in formis macropteris. Elytra libera, plus minusve depressa, corio, clavo membranaque composita, clava et corio rarissime in unum confusis, membrana rarissime deficiente. Tarsi tri-articulati.

PSAMMIINI: Ocelli desunt. Elytra tota coriacea, fortiter et communiter fornicato-convexa, per totam longitudinem coalita, corio et clavo in unum confusis, membrana deficiente. Tarsi bi-articulati.

Distant has described an Indian genus, *Meschia*, which he placed in the *Heterogastrinae*, but probably will prove to belong to the *Geocorinae*. It has the head and pronotum not unlike those of *Sympeplus*, and, judging from the figures, there is a tubercle behind the clypeus as in *Psammium*, though much less developed. He says nothing of the tarsi, and figures those of *M. pugnax* as three-jointed, whereas the figure of *M. quadrimaculata* represents them as two-jointed.* He included the genus in the *Heterogastrinae* on account of the membrane having a cell near the inner basal angle, but the *Heterogastrinae* have generally either two such cells or the longitudinal veins emitted from a transverse sub-basal vein. Distant has placed among the *Heterogastrinae* several genera which really belong to other subfamilies. For instance, *Esmun* Dist. and *Euhemerus* Dist. (both synonyms of *Blissus* Burm.) were referred by him to the *Heterogastrinae* on account of the above-mentioned cell; had he looked at Klug's figure of the type of *Blissus*, he would have seen that the venation of the membrane is quite the same. A cell near the inner basal angle of the membrane is not a character peculiar to the *Heterogastrinae*, but occurs in several genera and species of other subfamilies, as in some *Geocorinae*, *Blissinae*, etc., and is not of great systematic importance. Whether *Meschia* belongs to the *Heterogastrinae* or to the *Geocorinae* can be decided only by an examination of the spiracles, the position of which is quite different in these subfamilies.

Jämsä, Finland.

February 23rd, 1921.

Coleoptera of the Oxford District, Fifth Supplement, by J. J. Walker.—The Fifth Supplement to the preliminary list of the Coleoptera of this district, comprising a radius of 7 miles from the centre of the city at Carfax, has recently been published in the Report of the Ashmolean Natural History Society of Oxfordshire for 1920. This adds 130 species to those previously recorded by the same author, bringing the total number (allowance being made for sundry withdrawals) to 2070, very many of which are due to his unceasing activity in the field. Advantage is taken in the present Supplement to include several interesting species found during past years at Weston-on-the-Green, a locality just beyond the conventional radius, the Rev. A. Matthews having recorded various *Trichopterygidae*, etc., from this place. Of the *Stylopidae*, no fewer than eight species are enumerated, mainly due to the energy of Mr. A. H. Hamm.—G. C. CHAMPION, Horsell: April 19th, 1921.

Note on Cionus longicollis Bris. var. *montanus* Wingelm.—In the current number of the "Entomologist's Record" Mr. Donisthorpe gives an account of the distribution of our British *Cioni*, with a simple table of the species

* Mr. Champion informs me that they are three-jointed in both species.

and the description of a new one, *C. woodi*, from Windermere. The extract from Wingelmüller's "Monograph of the Palaearctic Cionini" (1914), regarding the "so-called" Portsmouth examples of *C. longicollis*, requires some comment. This species was introduced as British by myself in 1894, upon specimens captured by Moncreaff, a ♂ and ♀ of which had been compared by M. Bedel with Brisout's types, from Vernet, Pyrénées Orientales. These two insects must be the actual pair mentioned by the German author as being in his possession. They were lent by me to Dr. Daniel, of Ingolstadt, in March 1914, and not returned! If M. Bedel's determination was correct, the varietal name *montanus* Wingelm. must fall as a synonym. I have taken *C. longicollis* in abundance in the Austrian Tyrol, in many localities in Spain, and in Switzerland, but the only member of the *thapsus*-group seen by me at Vernet in 1891 was *C. hortulanus*. The new species, *C. woodi*, based upon a ♂ and ♀ captured by the Rev. T. Wood in 1914, is described as near *C. longicollis*, var. *montanus*, differing from it in wanting the pubescence on the thorax, the surface of which is sprinkled all over with very small, flat, roundish, yellow scales.—G. C. CHAMPION.

The Food-Plant of Bruchus rufipes Hbst.—Mr. Donisthorpe in his interesting note on *Bruchus rufipes* (ante, p. 51), puts forward the suggestion that this species breeds in the seeds of the sloe. Skaife, however (Bull. 12, Union of S. Africa, Dept. Agr. Pretoria, 1918), states that the beetle has been imported from Europe into South Africa in vetch seed, and such a leguminous host-plant would appear to be much more likely than the sloe, when the known host-plants of other species of the family are taken into consideration.—F. LAING, Brit. Mus. (Nat. Hist.): March 22nd, 1921.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, February 2nd, 1921.*—The Rt. Hon. LORD ROTHSCHILD, F.R.S., President, in the Chair.

The President announced that he had nominated the following Fellows to be Vice-Presidents for the ensuing year: Mr. G. T. Bethune-Baker, Mr. J. Hartley Durrant, and Commander J. J. Walker, R.N. He also announced that three Committees (Finance, Publications, and Library) had been formed in place of the Business Committee, and the names of the Fellows appointed to serve thereon respectively.

Mr. A. Bacot exhibited living specimens of *Cimex hirundinis*, and gave an account of his breeding experiments therewith. Dr. K. Jordan, samples of the Saturnian genera *Holocera*, *Ludia* and *Orthogonioptilum*, and demonstrated the presence of a kind of stridulating organ, absent in the males; also two species of *Graphipterus*, *G. rotundatus* Klug and *G. peletieri* Cast., from Algeria, both provided with stridulating organs. He said that the latter was found in association with *Cicindela truquii* Guér., and that although the difference was apparent in the cabinet, in nature they were practically indistinguishable. Dr. C. J. Gahan remarked on the great interest of the discovery of these organs in female *Saturiniidae*; the only other instance known to him being that of *Phonapate*, a genus of beetles of the family *Bostrichidae*.

Mr. O. E. Janson exhibited a fine specimen of *Markia hystric* Westw., a rare and remarkable locustid from Costa Rica. Prof. E. B. Poulton, F.R.S., a case of butterflies and mimetic moths which had been observed migrating together from one valley to another in Selangor, F.M.S., and read a letter from Mr. A. R. Anderson, the observer and captor, as to the conditions under which the exhibited specimens were taken. He also exhibited a female *Hypsa* (*Asota*) *alciphron* Cram. from Lampur, F.M.S., which after inspection had been rejected and neglected by Geckos; also examples of *Musca autumnalis* De G. found hibernating, as in previous years, at St. Helens, I.W.; the numbers appeared to be greater than in any winter except that of 1914-15 (*cp.* Proc. Ent. Soc. 1915, p. 21). Mr. Donisthorpe brought for exhibition a number of workers of *Acanthomyops* (*Dendrolasius*) *fuliginosus*, all of which had workers of *A. umbratus* fastened by their mandibles on to their legs, etc., taken at Woking in August 1915, when a fierce battle was in progress between the two species; it served as a good opportunity to establish how soon the Myrmecophiles entered the new nest, and those observed in the five ensuing years were also exhibited. Mr. Lachlan Gibb showed several forms of the female of *Chrysophanus dispar rutilus* bred by Capt. Bagweil Purefoy; after eight years' experimental breeding in this country, it was found that the blue sheen on the undersides of the species approximated more generally to that of the extinct form, but the broad orange band on the underside showed a tendency to diminish.

The following papers were read: "Notes on the Orthoptera in the British Museum, (I) The Group of *Euprepocnemini*," by Dr. B. P. Uvarov; "Notes on Synonymy, and on some Types of Oriental *Carabidae* in various Foreign Collections," by Mr. Andrewes.

Wednesday, March 2nd, 1921.—The President in the Chair.

This being the first meeting held at the Society's new premises, 41 Queen's Gate, South Kensington, S.W.7, the President delivered an address of welcome to the large number of Fellows and visitors present.

Mr. F. C. Willett, of Sipetong, B. N. Borneo, was elected a Fellow of the Society.

The President exhibited a collection of Gynandromorphous Lepidoptera, including examples of ♂ *Orgyia antiqua*, *Sciapteron dispar* Stgr., and *Papilio* (*Troides*) *haliphron*; also examples of British-caught *Colias croceus* (*edusa*), one having *helice* fore wings and normal hind wings, the other the right side *helice*, the left normal; and ♂ right side, ♂ left ♀ form of *Euchloe cardamines* from Epping Forest. Prof. Poulton brought for exhibition an example of marked irregularity in the colour adjustment of a *Pieris rapae* pupa to its surroundings; also the wings of the dragonfly *Aeschna grandis* left by a sparrow which had attacked the dragonfly and eaten the body. In the absence of the author, Prof. Poulton then read a paper by Dr. R. C. L. Perkins on "Variation in *Andrena rosae* and *A. trimmerana*," illustrated by a long series of examples of both species. Mr. G. T. Bethune-Baker exhibited specimens of *Lycaeninae* from Provence (France) to show the large proportion of those more or less leaden-coloured taken in the summer of 1920; the scales seen under the microscope were found to be ill-developed in all cases of the kind. Mr. H. J. Turner exhibited an example of a Zygaenid sent him by Mr. Greer from Tyrone,

suggesting a natural hybrid between *Z. lonicerae* and *Z. filipendulae*; also series of the large form of *Z. filipendulae*, occurring abundantly on Box Hill, in which the sixth spot was very weak and the first to disappear from wear, together with an example of *Z. anceps*, recently described by MM. Charles Oberthur, from Hyères, and a short series of *Z. trifolii albiana* Obthr. from the same locality. Mr. G. T. Talbot brought a number of specimens of *Euploea* from the Joicey collection, illustrating a supposed black and white mimetic combination in the Tenimber Islands, Fiji, and Australia; and a white-banded group in the Key and Arn Islands. Mr. Adkin exhibited an example of the moth *Margarodes unionalis* taken at sugar near Arlington, Sussex, a native of southern countries, and probably a migrant to our shores. Mr. H. J. Donisthorpe exhibited strings of the so-called "ground pearls," a Coccid (probably *Margarodes formicarum* Guilding), from Jamaica, and two examples of a species of *Cionus*, new to science, swept near Lake Windermere a few years since by the Rev. Canon Theodore Wood. Mr. W. J. Pendlebury showed an unusually dark form of the Carabid beetle *Anchomenus dorsalis* taken in Brecon, and a variety of the mosquito *Theobaldia annulata* first found in Mesopotamia and described by Capt. Barraud, R.A.M.C.; the specimen exhibited being from Earl's Court, October 27th, 1920, and given the varietal name (in MS.) of *subochrea* Edwards. Mr. W. G. Sheldon exhibited a series of 243 bred specimens of *Peronea hastiana* L. from Sutherlandshire, Wicken Fen, the Isle of Wight, and the coast of Lancashire; the series included most of named forms and a number of unnamed forms. Dr. K. Jordan exhibited *Misurgina lacta* from Madagascar, remarkable for its very strongly clavate antennae and the development of a stridulating organ; he compared the process with that occurring in other species of *Agaristidae* and *Noctuidae*; he said that *Misurgina* recalled *Pemphigostola* Strand (1909), placed by the author with the *Cusniidae*, but which would on re-examination probably turn out to be *Agaristid* also.

The following papers were read: "Notes on the Rhopalocera of the Dollman Collection," by N. D. Riley; "The Male Genitalia of *Merope tuber* Newm (*Mecoptera*), by F. Muir.

Wednesday, March 16th, 1921.—The President in the Chair.

The President announced that the Rev. George Wheeler had been obliged to resign the Secretaryship on account of ill-health, and that the Council had elected Mr. H. Rowland-Brown in his place. A vote of thanks to Mr. Wheeler for his services, extending over ten years, was proposed by the President and carried unanimously.

The following were elected Fellows of the Society: Capt. K. J. Hayward, Assouan, Egypt; Mr. E. Bolton King, Balliol College, Oxford; Mr. L. M. Pears, West Virginia, U.S.A.; Mr. E. D. Lewis, Swanley, Kent; Mr. W. J. Hall, Cairo, Egypt; Mr. D. Ponniah, Federated Malay States; Mr. H. D. Hope, Jernyn Street, S.W.1.; Prof. Dr. S. Matsumura, Japan; and Prof. C. P. Alexander, Illinois, U.S.A.

Prof. E. B. Poulton, F.R.S., exhibited a series of butterflies from Central Peru to illustrate the mimetic relationship between *Heliconius notabilis microclea* Kaye and *H. xenoclea* Hew.; Mr. J. W. Kaye suggested that the palata-

bility of the two was probably the same. Mr. H. Domisthorpe gave an account of the latest views on the subfamilies of ants, and illustrated his remarks with numerous diagrams. In connection therewith, Mr. W. C. Crawley exhibited representatives of each of the two groups separated by Wheeler, and remarked that the large Termite ants could be heard by their kind. Lt.-Col. H. D. Peile, I.M.S., brought for exhibition a collection of butterflies made by him in Mesopotamia; these included a new species of *Lycaena*, with the "Blues" with which it was taken in company, a new subspecies (*dyala*) of *Zegris eupheme* differing from var. *neneitho* Mén., which occurs at Fathab on the right bank of the Tigris, in the absence of the yellow suffusion in the ground-colour of the hind wing, and from ab. *tschudica* H.-S. in having more white in proportion to the green; and seasonal forms of *Melitaea trivia perseae* Koll. from various localities in Mesopotamia and the North-West Frontier of India. Mr. E. B. Ashby exhibited an example of *Papilio machaon rufopunctata* Wheeler from Les Voirons, Haut-Savoie; and a series of *Parasemia plantaginis* from the Col de Faucille above Cex, Ain, in the French Jura, showing a great diversity of variation; one specimen he thought might be referred to *matronalis*, but the President did not support this view, the melanism not being sufficiently pronounced. Mr. Talbot, on behalf of Mr. J. J. Joicey, exhibited Teratological aberrations of *Lepidoptera* and a case containing several new forms of African *Rhopalocera*.

The following papers were then read: "On some *Chrysomelidae* (Coleoptera) in the British Museum," by Mr. A. M. Lea; "Types of *Heteromera* described by F. Walker now in the British Museum," by Mr. K. G. Blair.

Wednesday, April 5th, 1921.—The President in the Chair.

The following were elected Fellows: Miss J. Riddell, Los Angeles, California, U.S.A.; Mr. C. Dover, The Indian Museum, Calcutta, India; Mr. D. J. Atkinson, Broadoak House, Newnham, Gloucestershire; Mr. L. B. Hopper, Manor House, Penrhyn, Cornwall; Mr. F. H. Lancum, Fernside, Shepherd's Lane, Dartford; Mr. F. D. Coote, 11 Pendle Road, Streatham, S.W.; Mr. H. E. Box, 151 Stamford Hill, N.16; Mr. H. M. Simms, B.Sc., The Farlands, Stourbridge; Mr. H. H. Wallis, M.A., 145 Wilmer Road, Heaton Road, Bradford; Mr. F. Rhodes, 113 Park Row, Heaton Road, Bradford; and the Rev. G. Watkinson, M.A., Woodfield, Hipperholme, nr. Halifax.

Mr. E. E. Green, remarking on the early appearance of *Lepidoptera* this season, stated that an example of *Xanthorhoe fluctuata* had come to light on March 12th; while in regard to the hibernation of *Pyrameis atalanta* in Britain—a still debated question—he had observed a specimen at sawfly on March 17th, at Camberley. Mr. C. B. Williams exhibited a case of insects from tropical America, including a *Monedula*, a species of wasp which buzzed only when digging and spreading mud; and examples of insects destructive to sugar-cane. Lt.-Col. H. D. Peile, a number of interesting *Lepidoptera* (*Rhopalocera*) taken on the N.W. Frontier of India and in N.W. Persia, including a gynandromorphous specimen of *Colias glicia* and a series of *Zephyrus quercus mesopotamica* of large size and brilliant purple colouring. Mr. J. H. Durrant, a series of *Blastobasis lignea* Wlsm., including var. *adjustella* Wlsm., captured in Lancashire, a member of the *Blastobasidae*, a family not hitherto taken in

Britain. The Rev. J. Waterston, examples of *Apanteles americanus* Lep., and its hyperparasites *Horismenus nigro-aeneus* Ashm.; the President said he suspected that the host on which this *Apanteles* was parasitic was *Phlegothoutius rustica*.

The President announced that the Library was now available for lending books to Fellows, and after a discussion, it was resolved unanimously, that the Society's new rooms at 41 Queen's Gate, S.W.7, should be opened from 5 P.M. to 10 P.M. on the third Wednesdays in the months of February, April, May, and June, for an informal meeting of Fellows and their friends.—H. ROWLAND BROWN, M.A., *Hon Secretary*.

ON VARIOUS GENERA OF BRITISH APHIDES (HOMOPTERA).

BY F. LAING, M.A., B.Sc., F.E.S.

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The present paper deals with certain Aphidae described by Walker, which have remained in obscurity since his time, and with which subsequent authors have never dealt. It is quite impossible to assign Walker's species to their proper genera from his descriptions alone; he gives few morphological details, and where he does, they are often misleading or erroneous. This is particularly noticeable in the case of those species which he did not mount on slides, but simply carded. The insects dealt with here were all mounted on cards, and the names over which they stand in our collections have been accepted as correct; they were all uniformly mounted, and in many cases bear data in what appears to be Walker's handwriting, while the number of specimens, as a rule, agrees with that which he gives in his Catalogue as being present in the British Museum. An examination of this material reveals the fact that we have representatives of three genera described in the last few years, one from Africa, the other two from America, present in this country.

Atheroides serrulatus Halid.

Apterous Male.—In my paper on the genus *Atheroides* (Ent. Mo. Mag. Feb. 1920) I omitted any reference to the apterous male. This resembles the apterous female in shape and disposition of spines very closely, but is considerably smaller, being but 1.5 mm. long by 0.4 mm. broad. Segment III of the *antennae* has about 25 sensoria, giving it a distinctly tuberculate appearance, while IV has about 10; the proportions of the segments are 30, 17, 76, 35 (26+50) (fig. 1, F).

Atheroides hirtellus Halid.

Through the kindness of Prof. F. V. Theobald, I have been able to see both apterous and alate specimens of this species. I also found it in abundance on *Aira caespitosa* at Monynusk, Aberdeenshire, in August 1920. The apterous examples were plentiful, and were to be found between the ribs of the leaf, upon which they left a brown, linear stain after they had been feeding for some time. The viviparous mother drops a larva, and then moves forward a little way to give birth to another, so that after a time a long row of young is to be found nestling between the ribs of the leaf, the mother at the head, and the oldest of the young at the tail. The young differ considerably from the dense black, glistening adults in having the dorsum broken up into large squarish black areas bounded by green.

Sipha schoutedeni Del Guere.

Aphis glyceriae Walker, Ann. & Mag. Nat. Hist. (2) ii, 1848, p. 43.

It would appear from Del Guercio's Monograph on the Genus *Sipha* (Redia, ii, 1904, p. 132) that *S. glyceriae* Kaltenbach differs from his *S. schoutedeni* in that the cuticle of the latter is completely spinulose, but that the two species resemble each other closely in coloration. As Walker's *S. glyceriae* has the cuticle completely spinulose, and is otherwise inseparable from *S. schoutedeni*, it should be known by that name, provided that Kaltenbach's species has been correctly determined on the Continent. Amongst a long series of apterous viviparous females are several apterous males. My colleague, the Rev. J. Waterston, found this species at Catacol, Arran, September 1920, Mr. H. Donisthorpe took it at Putney in November, and Mr. G. C. Champion has captured an example at Wisley, Surrey.

Sipha littoralis (Walker) (fig. 1, D, E).

Aphis littoralis Walker, Ann. & Mag. Nat. Hist. (2) ii, 1848, p. 44.

Apterous Viviparous Female.—Ovate, "rather flat, dark green, sometimes, but very rarely, pale green, not hairy nor bristly, but clothed with a white, velvet-like down" (Walker). *Antennae* yellow, black towards the tip, 5-segmented, segments I and II equal, III twice the length of II, IV one-third the length of III, with a rather large, primary sensorium at distal end, V base twice the length of IV, spur just about equal to the length of the base, with two short, strong spines at the tip, spur distinctly imbricated, primary sensorium large, compound. Total length 44 mm. (*i.e.* just reaching the hind margin of the prothorax), the proportions of the segments being 15, 15, 28, 10, 20+20.

Head, front distinctly conical, whole spinulose, length equal to length of first 3 segments of the antennae. *Rostrum* green, dark at the tip, reaching the mid-coxae, tip bluntly conical, with 2 hairs on either side. *Prothorax* spinulose, devoid of any larger spines; *mesothorax* uniformly covered with minute spines, with a few longer spines interspersed; *metathorax* with localised spinulose areas, often chitinated, with one or two larger spines in their midst, the proportions of the head and 3 thoracic segments being 60, 51, 75, 48. *Abdomen* with small, more or less chitinated areas bearing minute spines, and at least one large spine, a few still larger spines along the margin and towards the apex of the abdomen; the general shagreen visible with very great difficulty, even in stained specimens. *Cornicles* very short, little more than tubercles. *Cauda* knobbed. *Legs* dull yellow; *tarsi* black, robust, the length of the hind coxa .32 mm., tibia .38 mm., tarsi .16 mm.

Length 1.7 mm., breadth .9 mm.

Easily separated from *S. schoutedeni* Del G. by the localised spinulose areas on the abdomen, the latter species being uniformly covered with minute spines. All the specimens examined (about 20 in number) showed this character very distinctly. So far, this species is known only from Walker's original material, which was found on grass, in the autumn, near Lancaster.

Thripsaphis Gill.

This genus was erected by Gillette (Canad. Entom. xlix, 1917, p. 193) for an American species which has the wings normal aphidine (though the cubitus of the hind wing may sometimes be absent); eyes without ocular tubercles, cauda knobbed, anal plate divided, body with spine-like hairs, cornicles present as slightly elevated rings. At present four species are relegated to this genus, all from America.

Thripsaphis cyperi (Walker) (fig. 1, A-C; fig. 2, A-C).

Aphis cyperi Walker, Ann. & Mag. Nat. Hist. (2) ii, 1848, p. 45.

Apterous Viviparous Female.—Elongate, narrow, rather flat, green with black marginal areas on all the abdominal segments, on the mesothorax, front of the head, and at the base of the antennae. All the segments distinct, body constricted at the third abdominal segment, with roughly two irregular, lateral, longitudinal rows of black spots and a broad, median, pale-green longitudinal streak. *Antennae* very dark brown to black, basal segment pale, segments I and II subequal, III nearly equal to the sum of the two following, IV and V equal, VI with base and spur nearly equal, segment III with from 2-5 small, circular sensoria on the distal third; proportions, 6, 5, 33, 18, 17 (10+8) (some specimens 9+9); total length 1.96 mm. *Head* with front convex, two spines laterad, a gland in the convexity, strongly chitinated, another at the base of the antenna, and another situated behind the eyes near the hind margin, the latter not in a dark patch. *Eyes* without ocular processes. *Rostrum* 3-segmented,

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF
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The Annual Subscription for 1921 is 15/-.

Third Series, No. 78.]
[No. 685.]

JUNE, 1921.

[PRICE 2/- NET.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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VOLUME LVII.

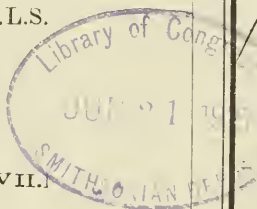
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reaching almost to the middle of the metathorax. *Pro-* and *mesothorax* incompletely separated; *prothorax* with a gland contained in a small black area laterad of the median line; *mesothorax* with a longitudinal black streak laterad and a black area on the margin. *Metathorax* with a black, latero-frontal area and also a marginal one; the head, *pro*+*mesothorax*, and *metathorax* about equal in length. *Abdomen* with the whole of the upper surface uniformly covered with small, circular pores, which in cleared specimens become very faint towards the middle line and ultimately disappear; they are very evident in the chitinised areas and on the whole of the last two segments. *Cornicles* mere pores on the 7th abdominal segment. *Cauda*

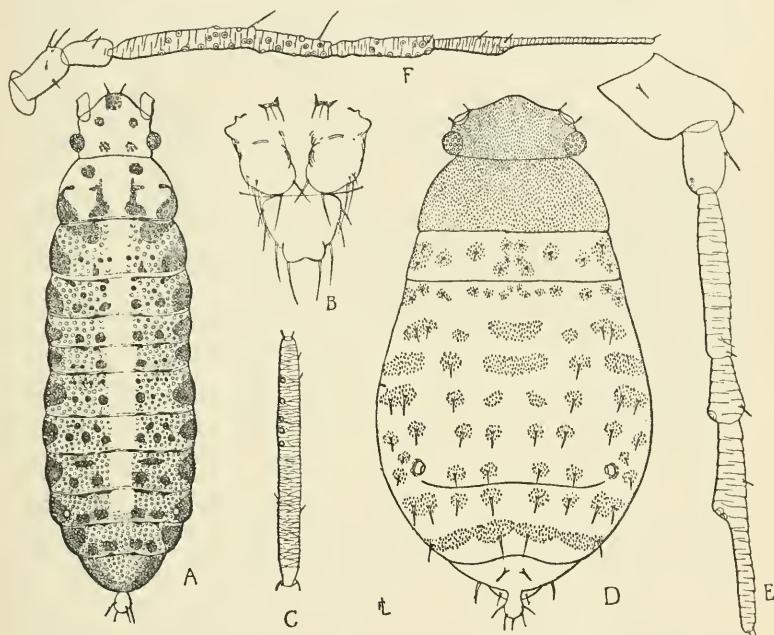


Fig. 1.—*Thripsaphis cyperi*. A. Apterous ♀. B. Cauda, anal lobes, and gonapophyses. C. 3rd segment of antenna. *Sipha littoralis*. D. Apterous ♀. E. Antenna. *Atheroides serrulatus*. F. Antenna of ♂.

knobbed; *anal plate* bilobed; *gonapophyses* 2. Whole body practically glabrous. *Legs* fairly long, *tibia* only moderately hairy; length of hind leg: femur 6 mm., *tibia* 8 mm., *tarsus* 18 mm.

Total length 3.5 mm., breadth 1.2 mm.

Alate Female.—Very elongate, narrow, dull green. *Antennae* black, proportions of the segments being 5, 4, 26, 15, 15, the last segment with its spur is broken off; segment III has 13 sensoria arranged along its whole length, either circular or elliptical, each double contoured. *Head* brown, rather long and narrow, with a quadrate projection in front and two large lateral sensoria. *Eyes* without the ocular process. *Prothorax* with a wide

marginal band, the *mesotergal bosses* and the *scutellum* densely chitinised and covered with small oval pits. *Rostrum* very short, 3-segmented, reaching the mid-coxae. *Wings* normal aphidine, all veins well-marked. *Abdomen* with 6 bands of strong chitin, interrupted into a broad central and a narrow marginal area, the chitinised areas covered with small oval pits. *Cornicles* mere pores, surrounded by a densely chitinised area. *Cauda* knobbed; *anal plate* bilobed; *gonapophyses* 2. *Abdomen* with scarcely any hairs. *Legs* long, robust; tibiae moderately clothed with hair. Hind leg: length of femur .56 mm., tibiae .84 mm., tarsus .18 mm.

Total length 2.64 mm.

On rushes near Belfast (*Haliday*); on *Aira caespitosa*, Monymusk, Aberdeenshire, August 1920 (*F. Laing*).

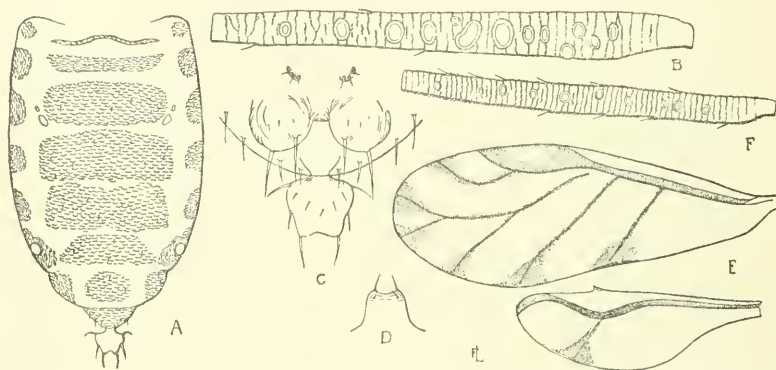


Fig. 2.—*Thripsaphis cyperi*. Alate ♀. A. Body. B. 3rd segment of antenna. C. Cauda, anal lobes, and gonapophyses. D. Frontal tubercle. *Saltusaphis insessa*. Alate ♀. E. Wings. F. 3rd segment of antenna.

I have found only the apterous viviparous females. The colour-description has been taken from fresh material; there is a difference between this and Walker's original description, as he makes no mention of any black markings, but a careful comparison with the type leaves no doubt that my specimens belong to the same species. In life it is covered with long, white filaments, readily soluble in alcohol, and at first sight bears a strong resemblance to a Coccid; in fact it was taken for that at first. It readily falls to the ground when the leaf upon which it is feeding is touched. All my specimens were taken on *Aira caespitosa*, growing in a marsh.

It is possible that *Myzocallis cyperis* Macch. (Soc. Ent. Ital. Bull. 15, 1883, p. 259) also belongs to this genus, though it may equally well belong to *Saltusaphis*, but in his description Macchiati makes no

mention of the thickened femora, which would seem to rule his species out of the latter genus.

Saltusaphis Theob.

This genus was erected by Theobald (Bull. Ent. Res. 6, 1915, p. 138) for an African species possessing 6-segmented antennae (Baker, Bull. 826, U.S. Dept. Agr. 1920, states that the genus has 5-segmented antennae, but this is a slip) minutely setulose; head elongate; ocular tubercles absent; fore wing with media twice branched, hind wing with cubitus usually absent; cauda knobbed; anal plate divided, caudal extremity of the abdomen sometimes bilobed; cornicles cup-shaped or truncate; body with spines modified into different shapes; legs modified for leaping. Since the genus was erected several American species have been assigned to it.

Saltusaphis insessa (Walker) (fig. 3, A; fig. 2, E, F).

Aphis insessa Walker, Zoologist, vii, app. p. 32, 1849.

Apterous Viviparous Female.—Oval, a little over half as long as broad, covered with short, fan-shaped hairs, placed on prominent bases. *Antennae* slender, about $\frac{5}{8}$ the length of the insect, 6-jointed, markedly free from spines with hair-rings closely set, the usual sensorium at distal end of V, the spur of VI separated from its base by a rather long obliquity, and with faintly marked primary sensorium, tip of spur with 3 short spines; proportions of segments, 21, 15, 72, 40, 42 (35+26); total length 1 mm. *Head* marginally chitinised, nearly twice as broad as long, with 2 latero-median spines on forehead, and with numerous fan-shaped hairs. *Rostrum* reaching to mid-coxae. *Eyes* without ocular process. *Prothorax* well-marked, a little less than $\frac{3}{8}$ the length of the head, irregularly chitinised towards the centre. *Meso- and metathorax* fused, about equal in length to the head + prothorax, slightly chitinised towards the centre. *Abdomen* with segments well marked, most strongly chitinised along the segmental margins and occasionally around the bases of the tubercles; around the cornicles, and on segments 5 and 6, strong chitin. *Cauda* knobbed, with a few long spines; *anal plate* widely bilobed. *Legs* femora of front and second pairs thickened, with numerous long spines, and spinulose; lengths of hind leg: trochanter .06 mm., femur .3 mm., tibia .44 mm., tarsi .176 mm.

Total length 1.7 mm., breadth 1 mm.

Pupa.—The potashed specimen resembles the apterous ♀, except that the body is chitinised only around the bases of the fan-shaped hairs, and in the head being practically all dark.

Alate Viviparous Female.—*Antennae* slender, about $\frac{3}{4}$ the length of the body, segment III with 10 secondary sensoria, double rimmed, of varying size scattered along the middle four-fifths; primary sensorium on V some distance from tip of segment; the spur of VI is broken off; proportions of

segments, 21, 17, 108, 55, 50 (35+?). *Head* dark brown, except for a clear median, longitudinal streak; about twice as broad as long, with (roughly) 6 longitudinal rows of fan-shaped hairs. *Prothorax* not quite so long as the head, almost wholly brown, with numerous fan-shaped hairs which are absent on the metathoracic bosses. *Wings*, all the veins bordered with brown, the brown area expanded at the tip of each. *Abdomen* mottled, with broad central bands on all the segments and marginal areas, the fan-shaped hairs confined to the brown areas. *Cornicles* enclosed in a brown area. *Cauda* markedly knobbed; *anal plate* bilobed. *Legs* with femora of first and second pairs markedly thickened; length of hind leg: trochanter .07 mm., femur .33 mm., tibia .56 mm., tarsi .19 mm.

Length 1.9 mm.

Described from 1 apterous ♀, 1 pupa, and 1 alate ♀ in the Walker Collection.

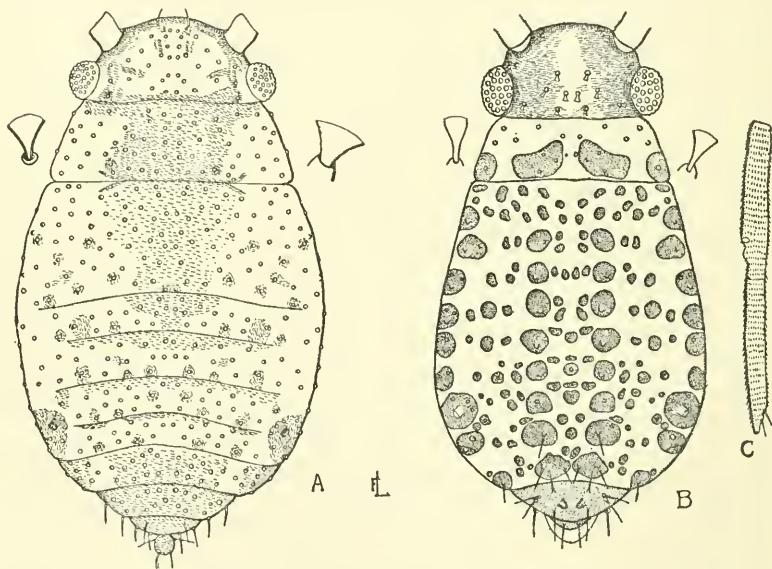


Fig. 3.—*Saltusaphis insessa*. A. Apterous ♀. *S. familiaris*. B. Immature ♀. C. Last antennal segment of same.

It is with considerable hesitation that I attribute this species to Walker. He says that his *insessa* was found on *Viola tricolor*, and he describes only the apterous viviparous ♀. The species here described stands, however, under *insessa* Walker in our collections, but the card bears the label "sea-wormwood" in what appears to be Walker's handwriting. The specimens were mounted in the same way as the rest of Walker's material, and it is very improbable that any mistake could have been made as to the labelling. It is much more likely that Walker misrecorded it from *Viola*.

Saltusaphis familiaris (Walker) (fig. 3, B, C).

Aphis familiaris Walker, Zoologist, vi, 1848, p. 2220 (nec Theobald, Ent. 1, 1917, p. 77).

The insect standing in our collections over the name of *Aphis familiaris* Walk. is a single immature specimen belonging to the genus *Saltusaphis* Theob. It possesses the typical antennae of that genus, the swollen femora, and the fan-shaped hairs on the body. The cleared specimen is very distinct from *S. insessa*.

Female.—*Antennae* about $\frac{3}{4}$ the length of the body; proportions of segments, 5, 4, 15, 9, 10 (6+10); total length 1.18 mm. *Head* rather strongly chitinated, except for a central longitudinal streak. *Thorax* and *abdomen* with a series of chitinous areas, more or less circular, arranged roughly in longitudinal rows, each area having at least one fan-shaped hair; standing out prominently are four rows of large areas, two medio-lateral, and the marginal; the chitinous areas, taken transversely, correspond to the segments which are very faintly visible. *Cornicles* situated in a heavily chitinated area. *Legs* short, thick, the femora of the first and second pairs much swollen, the hind tibiae thicker than either of the other pairs; lengths of hind leg: femur .36 mm., tibia .48 mm., tarsus .16 mm.

Total length 1.6 mm.

On *Lycopsis arvensis*, Fleetwood, Lancashire (*Walker*).

Aspidaphis adjuvans (Walker) (fig. 4, C-E).

Aphis adjuvans Walker, Zoologist, vi, 1848, p. 2220.

Aphis polygoni Walker, loc. cit. p. 2249.

In the Canad. Ent. vol. xlix, 1917, p. 196, Gillette erected a new genus, *Aspidaphis*, with type, *A. polygoni* Gill., found on a species of *Polygonum* at Fort Collins, Colorado. The distinguishing feature of the genus are the short 5-segmented antennae, the weak, recumbent cornicles, shorter than the hind tarsus, without flange, somewhat clavate, and with the opening lateral, on the inner side, near the distal end, and with the eighth tergite of the abdomen developed into a very large triangular shield, which in the type species extends well beyond the end of the cauda. An examination of Walker's *Aphis adjuvans* and *Aphis polygoni* reveals that they belong to this genus. All his specimens are either oviparous females or apterous males.

Oviparous Female.—"The body is granulated, elliptical, buff, tinged with red; the antennae are pale yellow, with black tips; the legs are pale yellow; the hind tibiae are brown" (*Walker*). *Antennae* a little more than one-fourth the length of the body, with very few spines, the primary sensorium on segment V compound; proportions (average of 6 specimens), 15, 14, 43, 22 (22+23); total length .55 mm. *Rostrum* reaching to the mid-coxae. *Abdomen* devoid of markings, glabrous, in potashed specimens showing slight rugosity;

dorsal shield completely covering tail. *Cornicles* recumbent, half the length of the hind tarsi. *Legs*, mid and hind coxae robust, hind tibiae not very much dilated, with about 20 sensoria; lengths of hind leg: trochanter + femur .34 mm., tibia .48 mm., tarsus + claw .16 mm.

Total length 2 mm., breadth 1 mm.

Apterous Male (of *A. polygoni*).—Smaller and more depressed than the female. *Antennae* black, segment III with about 20 secondary sensoria, IV with 13; proportions of segments, 15, 16, 65, 44 (30+31); total length .8 mm. *Abdomen* very rugose, markedly free from hairs; sides of abdomen more parallel than in the female. *Cornicles* as in female. Dorsal shield does not appear to completely cover the cauda, but that may be due to the shrinkage of the specimen.

Total length 1.5 mm.

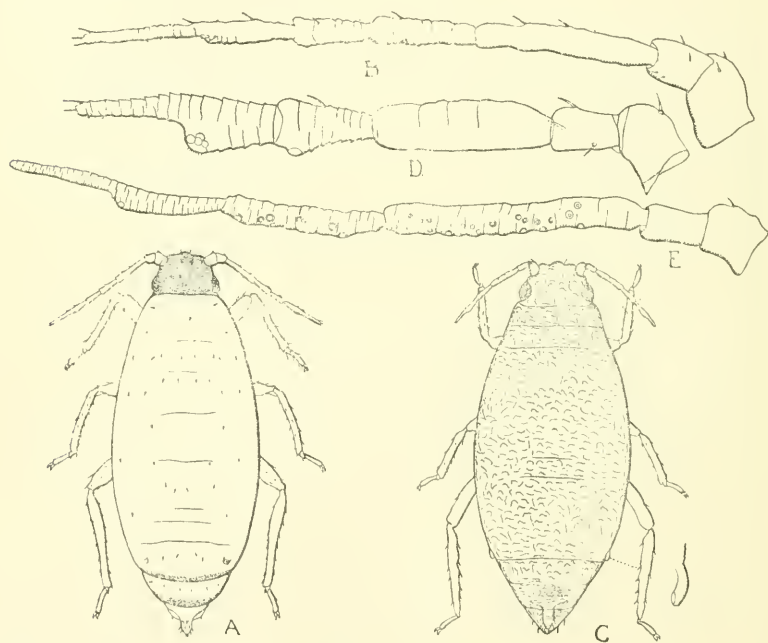


Fig. 4.—*Brachycolus frequens*. A. Apterous oviparous ♀. B. Antenna. *Aspidaphis adjuvans*. C. Apterous oviparous ♀. D. Antenna. E. Antenna of male.

On *Lycopsis arvensis*, near Fleetwood, Lancashire (*A. adjuvans*), and on *Polygonum aviculare*, near Newcastle (*A. polygoni*).

Gillette's *A. polygoni* must come very near Walker's species, if it is not the same. I can find no difference between *A. adjuvans* and *A. polygoni* either in Walker's colour-description or in structural details, and so reduce the latter to a synonym. This will not necessitate a change in Gillette's name.

Brachycolus frequens (Walker) (fig. 4, A, B).

Aphis frequens Walker, Zoologist, vi, 1848, p. 2219.

Oviparous Female.—Long, narrowly oval, green, powdered with white; head of a darker green than the remainder of the body. *Antennae* very short, a little less than one-third the length of the body; proportions of segments, 15, 15, 45, 26, 25 (25+35); a few scattered spines on all segments, 3 at the tip of the spur. *Head* (in cleared specimens) densely chitinised, gently rounded in front, with a few scattered spines. *Rostrum* reaching to the mid-coxæ, *Abdomen* with 7 pairs of submarginal spiracles, standing out clearly in cleared specimens on account of the small chitinised areas surrounding them; last two segments as strongly chitinised as the head, whole dorsum with a few short setae. *Cornicles* very short, no longer than broad, about half the breadth of the base of the tail. *Cauda* normal aphidine, of medium length. *Legs* rather short, hind tibia with about 20 small, circular sensoria; length of hind leg: femur .4 mm., tibia .52 mm., tarsus .18 mm.

Total length 2.4 mm.

The only specimens I have seen of this insect, in addition to those in the Walker Collection, are several oviparous females found in November 1920 by Mr. H. Donisthorpe, who found them crawling on a seat on Putney Common. The species is certainly congeneric with, but I think distinct from, *B. stellariae* Buckt. Walker records it from *Artemisia maritima*, but it has probably some other host-plant.

Aphis bufo Walk.

Aphis bufo Walker, Ann. & Mag. Nat. Hist. (2) ii, 1848, p. 46.

I shall content myself at present with remarking that the species standing under this name in our collections is a *Lachnus*.

Rhopalosiphum eriophori Walk.

Aphis eriophori Walker, Ann. & Mag. Nat. Hist. (2) ii, 1848, p. 46.

Hyalopterus eriophori (Walk.), Buckton, Mon. Brit. Aph. ii, 1877, p. 177.

An examination of Walker's slide bearing the data in his handwriting "eriophori, on *E. (Eriophorum) vaginatum* Wicklow, Aug. 16, 1847," and which Buckton had for his description, shows that this species is not a *Hyalopterus* at all, but belongs to the genus *Rhopalosiphum*. Through the kindness of Miss Jackson I have seen specimens of the alate female; this has got the cornicles distinctly clavate, much more so than in the apterous form. As Miss Jackson is engaged on a paper on this species, I shall say no more on the subject.

April, 1921.

THE HUDDERSFIELD VARIETIES OF *ABRAXAS GROSSULARIATA*,
WITH DESCRIPTION OF A NEW VARIETY.

BY G. T. PORRITT, F.L.S.

Perhaps in no locality in the United Kingdom is *Abraxas grossulariata* known to vary so much as in the Huddersfield district. Of the named forms we have no less than thirty-three; and if we include the forms of *varleyata*, to which the Rev. G. H. Raynor has attempted to give other names, and if the various forms of *nigrosparsata* were named in the same way, the number would be very largely increased. But I do not in the least approve of the naming of forms of a variety which is so distinct in itself as is *varleyata*; there is no possibility of mistaking them for anything but pure *varleyata*, and to my mind nothing is gained by further differentiating them, and it ought not to be done. For this reason I am content to leave the still more numerous forms of *nigrosparsata* under the one name.

It was in 1905 that I became specially interested in this species, and every year since then I have had a considerable number of larvae and pupae—one year as many as six thousand wild ones alone. And I may say at once that it has proved the most fascinating single species I ever touched. Some of the varieties bred have been most remarkable; and the time the imagines are emerging is always a very exciting period, as one never knows what extraordinary form may appear in the cages at any moment. Practically all my wild larvae have been obtained year after year from one market garden just outside the town of Huddersfield. In that garden for years was a considerable area of ground filled with very old, neglected gooseberry bushes, under which the grass had been allowed to grow, and among which the larvae hibernated without molestation in immense numbers. The stems of many of the bushes had grown very thick, and were blackened with age, and on them the larvae varied immensely in colour and appearance. From the ordinary form they were of all shades to perfectly black, many being black with more or less yellow markings, and others having clear longitudinal dark stripes; but the colour of the larvae had no influence on the resulting imagines, the blackest larvae producing as big a proportion of ordinary moths as the most ordinary larvae, and *vice versa*. For several consecutive years, too—about five, I believe—a considerable percentage of the pupae were uniformly glossy black, without any trace of the usual golden rings, but these also produced any form of the moth. One year the proprietor of the garden threatened to do away with the old bushes, but

I paid him to leave them in the ground; but eventually he was obliged to dig many of them up to make room for the extension of a poultry run, which he had added as an adjunct to his garden, with, I believe, good results. But after this there was comparatively little of the variation in the larvae, showing that previously they had assimilated themselves to the colour of the dark stems of the bushes. But I do not think it made any difference whatever to the variation of the imagines. During the last two years there were practically no larvae in the garden, nor anywhere else in this district.

In 1919 I could not find even a single one in the garden, and in 1920 only about half-a-dozen, which I left. Several collectors here were equally unsuccessful in other parts of the district. It will now probably take some years for the species to get up to its normal numbers if it has to depend on the very few which may have survived; and if it should possibly come about more rapidly through migrants from distant localities, it will be interesting to note how many years it will be before varieties become numerous, because even here the varieties are very local, being almost confined to the near town gardens. One may collect thousands of larvae from the village gardens only five or six miles away, and breed scarcely a moth worth setting.

The most interesting variety has been *nigrosparsata*, as it varies infinitely in itself from quite ordinary specimens with sparse spotting to the extreme blue-black form var. *nigra*. The race, too, has developed more rapidly than any other; for at the time I began to study the species, the form, so far as I know, had never been seen at all in this district, nor did it turn up until several years afterwards, the first notes I have of the form being from the 1910 wild larvae, when during it and the following year several appeared in the cages.

From that time they increased in numbers rapidly, so that in 1915 I had in the cages over 100 specimens, and in 1917 the form had so largely increased that my note-book states that "towards ten per cent. of the wild larvae must have produced var. *nigrosparsata*." Of these, the great majority, of course, were very ordinary examples of the form; but with them were a large number of exceedingly fine ones, and of great diversity in appearance. It is quite impossible by description to give the least idea of the variation and beauty of the many forms, but I have no doubt that my series of *nigrosparsata* is the finest representation of it in existence. One of the prettiest forms when fresh, and a not uncommon one, is that to which Raynor has given the name

nigrocoerulea. The sky-blue tint of all the wings is really exquisite, but unfortunately the tint is evanescent, and in a year or two it has become a dingy dove colour. Of the only other extra named form, var. *nigra*, the extreme dark form of the var. which has the head, thorax, body, and wings of a deep blue-black, I usually reared several each year. Some of my specimens of *nigrosparsata* have all the wings almost entirely black, with a submarginal broad band of white on the fore wings, or the band speckled with black to a greater or lesser degree in different specimens, whilst one is practically black, with the exception of a white patch at the anal angle of each fore wing. Some, too, have all the wings almost blue-black, with the exception of the usual basal and median golden bands, which stand out clear and give the insect a lovely appearance. Several of the *nigrocoerulea* have series of broad dark rays from the marginal spots to the median fascia, which give an exceedingly fine effect. Some of the specimens have the hind wings with the dense patches of black irregularly streaked with white. Another striking form is that with the fore wings more or less normal, but with the hind wings entirely slaty black, or brown, in different specimens. Asymmetry is common in the form, some examples having three wings *nigrosparsata*, and the fourth, usually a hind wing, is almost normal; but one specimen I have has three wings var. *nigra*, and the right fore wing irregularly streaked with white.

The shade of colour, too, varies largely in different specimens, from a pure white ground to yellowish, slate-colour, various browns, blue, blue-black to black. Indeed, the variation of the forms seems endless, and little idea of it can be given from description. Practically all my specimens have been bred from wild collected larvae and pupae, for the form will not breed true. I have tried it over and over again with some of the finest and most extreme specimens, but in only one case got more than about the same percentage of the variety as one does from wild collected larvae, practically all emerging as the ordinary normal forms.

The next variety in point of interest is *varleyata*. This magnificent form was first bred by the late Mr. James Varley in 1864, in which year he reared eleven specimens from, as I think he used to say, "two pints of caterpillars" collected from a garden in one of the smokiest parts of Huddersfield; and I well remember the mild sensation they created among the lepidopterists of that day, when figures of some of them were published in the "Naturalist." To my mind it is still the finest of all the varieties of British lepidoptera. Unlike so many other melanic insects, it has not progressed in numbers at all, and remains to-day as

rare as ever in a wild state. Indeed, I think I only remember one year when more were bred than Varley reared in 1864, when the number got up to about thirty specimens among several collectors.

Rarely have half-a-dozen specimens occurred in any one year, usually not more than one, two, or three, often none at all. In a wild state it is much rarer than *nigrosarsata*, although in collections it is now much the commoner form of the two; but that is because *varleyata* breeds absolutely true, and has been reared in large numbers by several lepidopterists. I have reared and set many hundreds of it myself. It varies exceedingly in the character of the white marking upon it. Sexually dimorphic, in that the males almost always have a greater or less number of white cuneate marks on the fore, or hind wings, or on both, whilst the females, except in the very rarest cases, show no trace of these cuneate marks. Some of the males show a great deal of this white marking, which gives them an exceedingly handsome rayed appearance; but in all my long experience I have only bred two females which showed it at all extensively, and the only ones in which it occurred on both fore and hind wings; these both emerged last year from a for some years inbred strain. Previously I had only seen any trace of it in a very few specimens, not a dozen all told, and then it only appeared as one or two white dots or short streaks on the hind wings. I do not think I have ever seen one even of such from a wild larva. The white band near the base of the fore wings varies infinitely in both sexes. In the original description it was depicted as a clear white band right across near the base of the fore wings, but in many cases the band does not go nearly across, and in the extreme dark form does not appear at all, the fore wings being absolutely black throughout, and becoming subvar. *nigro-varleyata*. Except when it is entirely absent, it invariably starts from the inner margin, and may consist of simply a small wedge-shaped spot or narrow streak; in others this streak is followed midway between it and the costa with another clear white narrow streak. In one striking form of which I have had a considerable number, the white band takes a zigzag shape, and branches out to the right at some distance from the costa, giving the appearance of the shape of a deer's antler; in some cases this antler mark is followed on the costa by a clear white spot. The width of the white band in the more normal forms of the variety varies greatly from a mere narrow streak of irregular shape to a quite broad fascia of almost uniform width throughout. These bands, too, are often absolutely clear, but in numerous cases they contain a single conspicuous black spot in the

centre of each towards the costa; in other specimens this spot is only found on one band, whilst in others there are more than one spot—sometimes several—in one or both bands. The subvar. *albo-varleyata* is the extreme form of the variety in the pale direction, and up to now remains unique, with the exception of a small crippled second brood specimen which emerged in one of my cages in the autumn of 1917. The subvar. *sparsata-varleyata* is a form having the white parts filled in with the *nigrosparsata* spotting, and of which I have bred about half a score specimens. The subvar. *lutea-varleyata* I have never seen in a wild state here, but as it appeared in some numbers in my cages without any admixture of var. *lutea* in the fore parents so far as I am concerned, there is no reason why it should not do so. It has occurred wild in a much more extreme form at Bradford.

A very interesting variety is *hazeleighensis*. As originally described by Raynor, *i. e.* with the black area of the fore wings containing spots of white, it is common here, but the extreme form of the variety, which was not known at the time Raynor made his description, is rare. In it the broad black area of the fore wings is solid black without a trace of white speck, and the broad median orange band is swollen inwardly to an orange patch before it meets the inner margin. In the hind wings, too, the central row of black spots usually more or less coalesce, often completely so, forming a clear broad semicircular band, and in one fine specimen I have there is another equally broad black band about midway between the central one and the base of the wing. In another specimen the orange band is entirely wanting on the left fore wing, the black area obliterating it and the submarginal row of spots; this specimen also has the ordinary central row of spots on the hind wings as broad black bands. These extreme forms are truly very handsome insects, and I have seen probably less than half a score of them altogether. The subvar. *sparsata-hazeleighensis* is the extreme form with the *nigrosparsata* spotting in addition. One of the most extreme I have bred has the hind wings almost covered with intense black except at the base, where it is more sparsely freckled with black, and I regard it as one of the finest specimens I have in my entire series of *grossulariata*.

The very pretty var. *lunulata* is of fairly common occurrence, and in a wild state produces var. *varleyata*. I have little doubt, indeed, that many more *varleyata* come from this form than from *varleyata* itself, as the latter is so rare that the chances when the sexes of it pair together must be extremely few. And I suppose that even the strongest advocate of the theory of "Natural Selection" would not say that moths

select their mates on account of their colour, though I have repeatedly seen it asserted that birds do so.

A striking form is var. *raynori*, and it is one of the few forms that breed largely true. The only other forms which I know to do this are *varleyata*, *flavofasciaria*, and *lutea*, though probably some of the others would be found to do so if tried, such as *aureofasciata*, *axantha*, etc.; but the great majority of them, including some extreme forms, will not. Var. *raynori* occurred here for, I think, several consecutive seasons, but seems to have gone, as it must be a dozen years since I saw a wild one.

The well-known var. *flavofasciaria* (*lacticolor*) occurs, but is a great rarity here. Why it should be so I do not know, as the pale more ordinary form, from which Raynor first obtained the original strain of the present day *flavofasciaria*, is, or rather used to be, common. During the first several years I was interested in the species, I bred these pale forms in plenty, but they apparently suddenly became scarcer, and I have not bred or seen one for the past seven or eight years. So possibly during the years prior to 1905, *flavofasciaria* may have been more common, although I have never seen evidence of it in the old collections of the district. The form occurs more than with us apparently in the adjoining county of Lancashire.

One of the most beautiful forms, the var. *aureofasciata*, is also rare. I have only three, and, so far as I remember, have never seen any other. Vars. *odersfeltia* and *mixta*, too, are very uncommon, although both turn up sporadically in most years when a large number of wild larvae are collected; and the same may be said of the neat-looking var. *axantha*. Vars. *lutea* and *semilutea* are still more uncommon with us, and vars. *subviolacea* and *semiviolacea* are very erratic in appearance; some seasons a few turn up in the cages, and then for several years none will be seen.

Vars. *albipalliata*, *albipatiata*, *cupreofasciata*, *igneofasciata*, *infrabifasciata*, *nigrofasciata*, and *radiata* are more or less plentiful, and some of the specimens in these minor varieties look remarkably well in the cabinet. Vars. *cuneata*, *nigrotincta*, and *vauaria* occur occasionally, but *nigricostata*, according to Raynor's description, is rare, although many specimens turn up in the cages to which the name would very well apply.

In addition to all these, I have many very remarkable forms which, not being recurrent, at any rate so far, I regard as casual aberrations, and as such it is inadvisable to give names to them. But these forms

undoubtedly give great zest to the interest in breeding the species, and by many collectors are prized even more than the recurrent forms.

Asymmetrical specimens are frequent in the species, some of them being very peculiar, the wings of one side being so different from those on the other side. To me the most interesting one I have was bred from a cross between vars. *variegata* and *lunulata* from a strain obtained from a pairing of wild *lunulata* several years previously. From that strain nothing had been bred different from the two parent forms up to 1917, in which year appeared from it one moth having one side of a totally different type. Both the left-side wings are of the black-and-white parent, but the right-side fore wing has a broad yellow band outside the median black band, and in the hind wings the markings and distribution of the spots are also totally different from those of the left hind wing. I am quite sure that no wild larva, or larva from any other strain, had been introduced among them, so that the deep yellow colour of the band and the other abnormal markings must have been inherent during the several years I had bred them, and may be, for years in their wild ancestors. I have still the same strain intact, and nothing of the kind has appeared from it since.

Another phase of variation, but a totally distinct one, which occasionally shows up, is that in which specimens have only three wings. I have placed three of these in my series—one in which the left fore wing is wanting, one in which the left hind wing is absent, and the other in which the right hind wing is absent. These emerged quite naturally, and I cannot, even with a strong lens, detect the faintest trace of a fourth wing in any of them. The missing wing is usually a hind wing; indeed, the one I have mentioned is the only one I remember to have seen with a fore wing absent. In every other respect they are all fine specimens.

A few days ago I visited the old garden from whence nearly all my larvae have come, but with a careful examination could find scarcely any trace that the larvae were feeding, and in fact only saw one, so the species is evidently going to be rare again this year. And if the stock has to be replenished by migrants from outside, it may be years before the varieties become common again. I shall not be surprised, indeed, if the extreme forms of *nigrosparsata* are now very rare for many years, as I suspect they have been the products of the interbreeding of the species in the limited areas of the old gardens. But that this interbreeding has not affected their size or robustness seems certain, as I have seen no bigger specimens than out of that garden, nor in so large

proportion. Many of my *nigrosarsata*, *variegata*, and *hazeleighensis* are really enormous examples. The species altogether seems to be considerably bigger in South West Yorkshire than in the South of England, judging from my limited experience of it there, and in looking over series in southern collections; and some of the correspondents to whom I have sent specimens have remarked on the exceptionally large size of them.

I hope this paper may be the means of inducing some lepidopterists to take more interest in this very abundant but most pleasing moth. Here there is a distinct tendency for the species to become gradually, but indeed rapidly, darker, and it wants specially working in those districts where the majority, or many of the specimens, are pale. During the past twenty years our knowledge of the median and dark forms has increased enormously, but we do not know so much of what the pale forms are capable of. There are two entirely white specimens, var. *candida* of Raynor, both, I believe, now in Mr. B. H. Crabtree's collection, and I think I have heard of a third example; but these are all we know, although there is no reason why the form should not occur more frequently, and one can readily imagine that unknown modifications of these pale forms might readily be brought to light by anyone systematically working districts where melanic influences are absent. As my own series of the species at the present time consists of 928 specimens, and I know that at least one British collection contains hundreds more than this, some idea may be formed of the immense scope there is in it.

Abraxas grossulariata var. *melanapicata*, n.

In this variety the wings are more or less normal, except that the apex of the fore wings is entirely filled in with a large, more or less square blotch of black. The form occurs occasionally from wild larvae, and my few cabinet specimens of it include one covered with the *nigrosarsata* spotting.

Elm Lea, Dalton, Huddersfield.

April 5th, 1921.

NABIS LATIVENTRIS BOH., A MYRMECOPHILOUS INSECT.

BY HORACE DONISTHORPE, F.Z.S., F.E.S., ETC.

I was very much interested in Mr. E. A. Butler's valuable paper on *Nabis lativentris* Boh. (*antea*, pp. 57-61 : 79-81), in which he relates for the first time a great deal of the life-history of this Hemipteron.

I am personally, however, more concerned with its occurrence with ants, and can add several more records of such cases than those mentioned by Butler.

Reuter (1879) found the larva in company with a *Myrmica* species in the South of France.

Wasmann (1894) records the species with *Acanthomyops* (*Dendrolasius*) *fuliginosus* from Dutch Limburg, and with a *Myrmica* species from the North of France.

Janet (1897) quotes the above records, and writes :—" C'est sans doute un myrmécoïde myrmécophagè."

Wasmann (1898) found the brachypterous form in numbers with a large colony of *Acanthomyops* (*Dendrolasius*) *fuliginosus* at Wynandsrade, near Valkenburg, in July 1887; and he considers this form to be myrmecophilous, as it has also been found elsewhere with ants. He mentions that Father Handmann also took it in some numbers with *Acanthomyops* (*Donisthorpea*) *niger* at Travnik in Bosnia. He says the bug is probably a "mierenerer."

Wasmann (1899), in a paper on the ants and myrmecophiles taken by Handmann in Bosnia during the summer of 1899, says it was taken in several nests of *A. (D.) niger* at Travnik on July 24th, and, further, in a nest of *Formica cinerea* on August 3rd. He remarks that it can be regarded with more or less certainty as a myrmecophile.

Sharp (1899), after describing the resemblance of the larva of this bug to an ant, and figuring the older form which does not possess the spines, writes :—" The bug runs about on plants and flowers, and is frequently in company with ants, but we do not know whether it preys on them. Not the least remarkable of the facts connected with this insect is that the resemblance is confined to the earlier instars, the adult bug not being like an ant. We may here mention that there are numerous bugs that closely resemble ants, and that on the whole there is reason to believe that the resembling forms are actually associated during life, though we really know very little as to this point."

Donisthorpe (1902), in a paper on the British Myrmecophilous Fauna, quotes Sharp at some length, and also gives some of the above records of the bug being found with ants.

Donisthorpe (1921) records the capture of larvae of this bug with different species of ants in Cornwall and near Chichester in 1920.

I am satisfied that I have very frequently seen the various stages of the larva of *Nabis lativentris* with ants during the last twenty years. The following list, however, consists of those specimens which I actually captured with ants, the localities, dates, etc., being noted in my myrmecophilous journals and "pilot" files:—

Larvae of various sizes running on paths in company with ♂♂ of *Formica fusca* and *A. (D.) niger* at Chale, I. of W., on July 24th, 1906. The smaller specimens occurred with the latter ant.

A young larva taken in a nest of *F. sanguinea* at Wellington College September 17th, 1906.

Young larva in nest of *F. rufa*, Tubney, August 4th, 1909.

Several running about in company with ♂♂ of *F. fusca* v. *glebaria* at Sandown, I. of W., August 3rd, 1913. "Very ant-like and about the same size as the ants."

"*Nabis* larvae, various sizes running about with ♂♂ of *F. fusca* v. *glebaria*, and among *Acanthomyops (Chthonolasius) flavus* and *A. (D.) alienus*." The larger specimens with the larger ant, Sandown, August 10th, 1913.

A larva swept with ♂♂ of *F. fusca* v. *glebaria* at Porthcothan Bay, Cornwall, on July 9th, 1920, being about the size of the ants; and a smaller specimen running over a nest of *A. (D.) niger* at the same place on the same day.

One swept up by the side of a marsh near Chichester on August 17th, 1920, in company with ♂♂ and del. ♀♀ of *Myrmica scabrinodis*. This specimen has yellow instead of white borders to the abdomen, and is the same size as the *scabrinodis* ♀♀.

Butler writes:—"If the ant-like appearance is protective in function, it would seem that, as ants do not alter in size, while this larva does, the ant association should be with different species at different periods in the life-cycle, with smaller species of ants such as *A. nigrum* when the *Nabis* is quite young, and with larger species such as the *Formicae* when it is more fully grown. This does not, however, appear to be the case."

It will be seen, however, in the above list that it so happens that in my experience this is generally the case. I consider this insect to be an ant mimic in its earlier stages, when it is usually found in the company

of ants. From this mimicry it obtains protection from outside enemies, both as much when away from ants as when with them.

On the occasion when I found a small larva of the *Nabis* sucking a bug of another species larger than itself (quoted by Butler and recorded by Poulton), it was in the close vicinity of a number of ants. This may also have been the case in the observation made by Marchal when the bug was noticed sucking the eggs of white butterflies. But even if this were not the case, the protection to the species obtained by its mimicry of ants would be equally valuable. As, however, I propose to write a separate paper on the mimicry of ants by other arthropods, I will not labour the point any further here.

It is possible that the bugs may occasionally prey upon ants themselves (though this fact has not been recorded), which would justify Janet in calling them "ant-mimicking ant-eaters."

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ON THE NATIVE COUNTRY OF THE COMMON HOUSE-CRICKET (*GRYLLUS DOMESTICUS* L.), WITH A DESCRIPTION OF A NEW VARIETY.

BY B. P. UVAROV, F.E.S.

Brunner v. Wattenwyl, in his "Prodromus der Europäischen Orthopteren" (p. 433), stated that the common house-cricket occurs in Madeira, probably out of houses. More recently Dr. H. Krauss, during his investigation of the Orthopteran fauna of the Sahara,* discovered that this insect is quite common in the oases of that region, where it is to be found under stones, on palm trunks, etc. Both writers, however, were inclined to believe that the "wild" specimens have simply aban-

* "Beitrag zur Kenntniss der Orthopterenfauna der Sahara," Verh. zool.-bot. Ges. Wien, lii, 1902, p. 250.

doned their usual places of habitation, *i. e.* houses, owing to the mild climate of those countries. This view is undoubtedly incorrect. I have had the opportunity of studying numerous collections of Orthoptera made in different parts of Persia and Arabia, and *Gryllus domesticus* proves to be one of the commonest species in these countries, specimens of it being always taken in the open country. As this species belongs by all its essential characters to the group inhabiting the deserts of S.W. Asia and N. Africa, there is no reason for doubt that those deserts are its real native home. It goes also farther southwards, as Prof. Y. Sjöstedt has found it in the steppes near the Kilimandjaro.

It is quite easy to understand that this insect being but partly carnivorous and feeding readily also on vegetable and animal refuse, has been able to adapt itself to more easy conditions of existence in human habitations. It is interesting to mention that in the regions bordering the deserts from the north, *Gryllus domesticus* is by no means so entirely attached to human habitations as is the case in more northern countries; thus, in Transcaucasia, I observed it out of houses in summer, while in winter it migrates again into houses. In Europe the house-cricket is a "domesticated" insect, and is to be found in the warmest parts of the houses only, especially in kitchens and bakeries. It does not like warm buildings where the air is damp, such as hothouses, public baths, etc., though these are the most favourable places for cockroaches and other introduced exotic insects; this fact strongly supports the idea of the desert origin of the house-cricket. E. E. Austen, in a recently published note,* has drawn attention to the fact that *G. domesticus* occurs at a large refuse-dump not far from Hatfield, which he describes as "teeming with *G. domesticus*"; he is evidently correct in his suggestion that this "wild" colony of house-crickets has been formed by the deportation of the insects from London with refuse. As the colony is not less than thirty years old, we may conclude that the mild climate of England, though very unlike that of the deserts, suits the house-cricket well.

The distribution of *G. domesticus* beyond the limits of the Palearctic region is but very little known. Quite reliable information exists with regard to North America only, where it is now widely distributed,† being undoubtedly introduced by ships from Europe; there are no records whether it occurs there out of houses as well.

* "The Entomologist," liv, No. 696, May 1921, pp. 127-128.

† J. Rehn & M. Hebard, "The genus *Gryllus* as found in America," Proc. Acad. Nat. Sciences, Philadelphia, May 1915, pp. 320-321.

As for the distribution of the house-cricket in the regions southwards of the Palaearctic deserts, I have already mentioned its occurrence in the Kilimandjaro region in the open country; but nothing was known about its co-habitation with man till quite recently, when the Imperial Bureau of Entomology received several examples of a small species of *Gryllus*, taken in a house in Khartoum. These proved to be identical in all their characters with specimens of *G. domesticus* L. from Europe and from the deserts of Asia, but strikingly different in their dimensions. The shape of the head in the Khartoum insect is also slightly different from that of the typical form, the lower part of the front being more prominent forwards; but this character is to be seen in some "wild" specimens from the deserts. More material is wanted for a definite conclusion as to the taxonomic value of this form, which might be a southern race of the house-cricket, and I propose to call it in the meantime by the vague term of a variety—*Gryllus domesticus* L., var. *meridionalis*, var. n. Its dimensions are as follows:—

| | ♂ (type). | ♀. |
|--------------------------|-----------|----------|
| Length of body..... | 13.5 mm. | 13.5 mm. |
| " " pronotum..... | 2.5 | 3 |
| " " elytra | 8.5 | 9.5 |
| " " wings | 17 | 19 |
| " " hind femora | 7.5 | 8 |
| " " ovipositor | — | 10 |

The series consisted of 4 ♂♂ and 5 ♀♀; all were taken in Khartoum, 17.iii.1920, by Mr. R. Cottam. The type is preserved in the British Museum.

Other records of the house-cricket from countries south of the Desert region should be interesting, especially those from India. Records and specimens, particularly from houses, might be sent to the author (Natural History Museum, Cromwell Road, London, S.W. 7).

London.

May 19th, 1921.

OXYCERA TENUICORNIS OR EUPARYPHUS TENUICORNIS?

BY O. A. JOHANNSEN.

In the "Natural History Review" for 1857, vol. iv, p. 193, Mr. Haliday published a description, with figures, of the larva of a Stratiomyid, which, although not reared, he thought might belong to the species *Oxycera morrisii*. In most particulars the larva, as figured and

described, resembles those of other species of *Oxycera*, but differs in being armed on the ventral side of the penultimate segment with a pair of sharp, curved, spine-like horns, much larger than those found in *Odontomyia*. Recently, in examining a lot of Stratiomyid larvae, I found just such a structure in the American genus *Euparyphus*. As this genus is not recorded from Britain by Verrall, I was puzzled as to the position of Haliday's larva. I therefore tried out my specimens of *Euparyphus* by Verrall's tables, and found that they would fall in with *O. tenuicornis* Macq. by reason of the antennal structure, and am now inclined to believe the two are congeneric. Mr. Verrall gives *O. longicornis* Dale as a synonym of *O. tenuicornis*, and further states that Dale's original description was obviously written by Haliday. It appears quite possible, therefore, that Haliday's larva may belong to *O. tenuicornis* instead of to *O. morrisii*. The structure of the larva certainly warrants such assumption. The fact that the larva was collected in Ireland, though the adults of *O. tenuicornis* have not yet been recorded from that island, offers no particular difficulties, since the latter has a rather wide European distribution. The locality in which Haliday found the larva—"among the Confervae and *Marchantia* on the face of a dam serving for an outlet to the superfluous water of a mill-race and continually moistened by a shallow but rapid fall of running water"—describes just as precisely the place on Cascadilla Creek, at Ithaca, N.Y., where my larvae of *Euparyphus brevicornis* Loew were found. The opinion that *O. tenuicornis* is generically distinct from *Oxycera* is shared by other entomologists, since Villeneuve erected the name *Vanoyia scutellata* for a fly which Verrall considers identical with *O. tenuicornis*. The characters ascribed to *Vanoyia* Vill. apply equally well to *Euparyphus* Gerstaecker.

Ithaca, N.Y.

April 1921.

Coleoptera on the sandhills, Monifieth, Firth of Tay.—With reference to Prof. T. Hudson Beare's interesting notes on *Coleoptera* on the sandhills at Gullane (*antea*, p. 89), I send a note on some of the beetles I have found on the sandhills near Monifieth on the north side of the Tay. It is probable that these sandhills, which are extensive, have never been collected over. Insects are plentiful, and the beetles now recorded have been taken at various times while searching for *Diptera*. Most of the names were confirmed for me by the late W. E. Sharp. *Cleonus sulcirostris* L. is never common here, and I have seldom seen it on the bare sand, but it may be found by searching thistles; *Otiorrhynchus atroapterus* De G. is always common, and so is *O. ovatus* L.,

while *Philopodon geminatus* F. is perhaps the beetle most in evidence crawling on the bare sand. Other species more or less plentiful are: *Saprinus nitidulus* Pk., *S. aeneus* F., *Omosita discoidea* F., *Nitidula bipustulata* L., *Microzoum tibiale* F., *Serica brunnea* L., *Anomala frischei* F., *Chrysomela staphylea* L., and *Aegialia arenaria* F. Rarer species are: *Staphylinus stercorarius* Ol., in August 1918 and 1919; *Orthocerus clavicornis* L., half-a-dozen in June 1918; *Aphodius rufipes* L. and *Telephorus rusticus* Fall.—A. E. J. CARTER, Monifieth, Forfarshire: May 1921.

Phyllodrepa linearis Zett.: a new British Staphylinid beetle.—Since September 1909 I have had in my collection a *Phyllodrepa*, captured by myself at Blair Atholl, Scotland, which seemed to be new to our list. On going over this genus a short time ago to make out a table for my book on British beetles I thought it worth while to have the insect identified by Col. Deville. He sent it back as *P. linearis* Zett., and stated that "it occurs chiefly in Northern Europe and the Alps, in extensive fir and spruce woods; the punctuation of the abdomen is very different from that of *Ph. ioptera*." *P. linearis* is distinguished from its allies (viz. *ioptera*, *gracilicornis*, *vilis*, *grandiloqua*, and *heeri*) by its much lighter and more uniform colour, the antennae being entirely yellow, not darkened towards the apex as in these species (except sometimes in *heeri*), and the thorax is more finely and diffusely punctured. In its convexity *linearis* resembles *ioptera*, but it has the elytra more finely, and the hind-body much more finely and diffusely, punctured. The following is a brief description of the insect:—"Distinctly convex, reddish yellow, head and apex of hind-body pitchy, antennae and legs entirely yellow; thorax finely and diffusely punctured; elytra moderately strongly punctured; hind-body very finely and very diffusely punctured. Length 2.5-3 mm."—NORMAN H. JOY, Theale, near Reading: May 5th, 1921.

Melanophila acuminata De G. in Kent.—On June 23rd last I captured on the wing a single specimen of *Melanophila acuminata* De G. at Deal, quite close to the shore. A careful search of the spot failed to produce further examples, and I know of no locality in the neighbourhood likely to be congenial to the species. It is possible that my example had flown over from the Continent, but my pleasure was none the less, as I had never before seen *M. acuminata* alive.—B. D. CUMMING, Boulderwall, Oxted: April 18th, 1921.

A note on Liparus germanus L.—As I have had excellent opportunity in recent years for observing this weevil, which is anything but uncommon in certain districts of East Kent, a few notes may be of interest. As soon as the Hogweed, *Heracleum sphondylium*, begins to throw up its coarse leaves in the spring, *L. germanus* appears, sparingly at first, but in quantities about the middle of May. The earliest date on which it has been noted was April 10th, last, and the latest date August 12th, 1919. Though it may be found feeding on the leaves at all hours of the day, the greatest number will be found from about 4.30 till dusk. The best time is apparently after rain. When satisfied it crawls down and wanders away into some dark corner. It is confined to the *Heracleum*, and its presence is revealed by the eaten state of the leaves. The

larvae may be found in the winter feeding on the roots of the same plant. The perfect insects may be found by searching around the roots at any time during the day, but this method is more tedious than picking them off the leaves in the evening. I have taken as many as fifty of these fine weevils in half an hour from two sides of a field.—C. A. W. DUFFIELD, The Cottage, High Street, Wye: *April 19th, 1921.*

Abundance of Pyrochroa coccinea in the New Forest.—This showy beetle is an exception to the apparent scarcity of *Coleoptera* in the New Forest during the present season. Half-a-dozen specimens may be found at a time on prostrate and decayed beech trunks, and its flat centipede-like larva, in all stages of growth, is to be seen whenever a piece of loose bark is pulled off. *Colydium elongatum* has been met with on several occasions during the past week, and one example, probably beaten off an oak bough, was even found on my coat; and a ♀ *Meloë brevicollis* was picked up among short grass at Bank by my daughter on May 21st.—JAMES J. WALKER, Brockenhurst: *May 27th, 1921.*

Some Isle of Wight Collembola.—The literature relating to the distribution of the *Collembola* contains very few references to species occurring in the Isle of Wight; so the following may be put on record. The species mentioned were obtained in the neighbourhood of Sandown during late July and early August 1920. *Achorutes viaticus* Tullb. occurred, as is frequently the case, under decaying sea-weed. *Pseudachorutes asigillatus* Börn., scarce, and *Neanura muscorum* Templ., plentiful, in decaying wood. *Isotoma viridis* Bourl., very common, as is usually the case. *Tomocerus minor* Lubb., plentiful; *T. longicornis* Müll., common. This latter is a southern form, and is also common on the Sussex coast, but is apparently rare in the north. I have never taken it in Derbyshire or Yorkshire. *Isotomurus palustris* Müll., plentiful. *Entomobrya lanuginosa* Nic., common amongst dry sea-weed; *E. marginata* Tullb., fairly common; *E. nicoleti* Lubb., common; *E. muscorum* Tullb., less common; *E. multifasciata* Tullb., occurred plentifully; *E. nivalis* (L.), common, as is usually the case. *Lepidocyrtus lanuginosus* Gmel., very common; *L. cyaneus* Tullb., less common than the last. *Orchesella villosa* Geoffr., plentiful. This is another southern species, and appears to be more plentiful in the south than the next, which is much more abundant in the north. *O. cineta* L., also quite common; var. *vaga* L., not so common as the type. *Bourletiella bicincta* var. *repanda* Agr., common, and *Sminthurus viridis* L., very plentiful amongst grass. *Aliacma fusca* L., obtained by sweeping damp herbage near Alverstoke. It does not appear to be at all common, only one specimen being obtained. *Dicyrtomina minuta* O. Fabr., common under fallen branches; var. *ornata* Lubb. was found, but is usually more plentiful in winter; *Dicyrtoma fusca* Lucas, fairly common. It will be noticed that comparatively few of the *Sympleona* were obtained.—J. M. BROWN, 176, Carter Knowle Road, Sheffield: *May 11th, 1921.*

Obituary.—We regret to announce the death of Dr. G. B. Longstaff on May 7th, and of R. C. Wroughton on May 15th, and hope to give a fuller

notice in our next issue. The Rev. George Crawshay, Vicar of Melchbourne, Bedfordshire, died in December last, as we gather from a "Memoriam" notice sent out by his brother, Captain Richard Crawshay.—EDS.

Review.

"MONOGRAFIA DELLE COCCINIGLIE ITALIANE," by GUSTAVO LEONARDI: edited by Prof. F. SILVESTRI; Portici, stab. Tip. Ernesto della Torre, 1920. (British Agents, Dulau & Co., London. £2.)

The present work is a posthumous publication, edited under the careful supervision of Prof. Silvestri, who has added an appendix of 30 pages. Dr. Gustavo Leonardi, the author of the Monograph, who died in the year 1918, at the early age of 49, was well known to students of the *Coccidae* throughout the world by his many valuable papers on the Scale Insects, including critical revisions of most of the genera of the subfamily *Diaspidinae*. The present volume, comprising 555 pages and including 375 text-figures, describes in considerable detail the 50 genera and 147 species that occur in the kingdom of Italy. The earlier chapters are devoted to the general characters of the family, to the natural enemies of *Coccidae*, and to remedial measures, with the last of which subjects Dr. Leonardi was very largely concerned in his duties as Entomologist to the Royal Agricultural School at Portici. The remaining chapters provide excellent descriptions of the morphological characters of the various species, with more or less complete life-histories of most of them.

I notice that the author includes, in the genus *Monophlebus*, the insect that has hitherto been known as *Guerinia* (or *Gueriniella*) *serratulae*, and has also reduced to the rank of synonyms the genera *Drosicha*, *Tessarabolus*, *Llaveia*, and *Ortonia*. I may say that I am in full agreement with this synonymy, and I would add *Monophlebulus* also to the list.

An error, for which I was originally responsible, has unfortunately been repeated in this work. The author describes and figures, under the name *Aspidiotus lataniae* Sign., a species which is almost certainly *A. destructor* of Signoret, and cites *transparens* Green as a synonym of *lataniae*—as represented in Part 3 of my "*Coccidae* of Ceylon." I have since shown (Ent. Mo. Mag., 3rd ser., x, p. 181, Aug. 1899), after examination of type material of Signoret's species, that *transparens* (which I now consider to be a varietal form of *destructor*) is quite distinct from *lataniae*, and that the latter is—in all probability—equivalent to Comstock's *cydoniae*.

I have no hesitation in saying that Leonardi's Monograph will be an essential item in the library of every serious student of the *Coccidae*.—E. E. GREEN.

G. A. BENTALL,

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

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THE MUSEUM, HULL;

AND

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The Annual Subscription for 1921 is 15/-.

Third Series. No. 79.]
[No. 686.]

JULY, 1921.

[PRICE 2/- NET.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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VOLUME LVII.

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The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

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CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.—

This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

SOME INDIAN COLEOPTERA (5).

BY G. C. CHAMPION, F.Z.S.

(Concluded from p. 110.)

Malachius indicus.

Malachius indicus Pic, Bull. Soc. d'Hist. Nat. d'Autun, xxv, Compt. Rend. p. 101 (1913) (♂ ♀).

♂. Moderately elongate, shining, very finely pubescent; greenish-aeneous, the ante-ocular portions of the head, the labrum, palpi (except at tip), lateral and basal margins of prothorax, sutural angles of appendages of elytra, sutures and terminal segment of abdomen, anterior coxae, and legs (the infusate tarsal joints 3-5 excepted) testaceous, the antennae black, with joints 1 and 2 testaceous beneath: the upper surface closely, extremely minutely punctate, the elytra alutaceous and somewhat rugulose, the prothorax more shining. Head short, transversely grooved between the eyes, nearly as wide as the prothorax; antennae long, stout at the base, serrate, joints 5-10 sharply dentate, tapering outwards. Prothorax transverse, rounded at the sides, narrowed towards the base. Elytra parallel, not wider than the prothorax, comparatively short, leaving the terminal abdominal segments exposed, with an indication of raised lines on the disc; transversely, deeply, abruptly excavate at the apex, the upper sutural angle >-shaped and the lower one sinuously, obliquely plicate above, the intervening space bearing a compressed ciliated appendage. Posterior tibiae curved.

♀. Antennae short, rather slender, serrate; elytra longer, testaceous along the apical margin.

Length 5 mm.

Hab. "Indes" (*type of Pic*), W. Almora Division of Kumaon (*H. G. C.*: iii.1918, iii.1919).

One pair, doubtless referable to *M. indicus* Pic, the description of which I had not seen till after the above was written. Belongs to Abeille de Perrin's Group 2, "Limbatii," near *M. turanicus* Reitt. (1889), from Turcomania.

Malachius sikkimensis.

♀. *Malachius sikkimensis* Pic, L'Echange, xxiii, p. 171 (1907) ?

♀. Moderately elongate, very finely pubescent, the head and prothorax shining, the elytra opaque; brassy-black, the lateral margins of the prothorax broadly (leaving a laterally-angulate, broad, dark vitta on the disc), and the elytra, scarlet or brick-red, the ante-ocular portions of the head and margins of the labrum testaceous, the under surface in part, legs, and the antennae entirely, black; the elytra densely alutaceous, the head and prothorax closely, extremely minutely punctate. Head short, nearly as wide as the prothorax, shallowly foveate in the middle between the eyes; antennae moderately long, sharply dentate from the third joint onward. Prothorax transverse, rounded

at the sides. Elytra a little broader than the prothorax, slightly widened posteriorly. Legs rather slender.

Length 4-5 mm.

Hab. Sikkim (*type of Pic*), W. Almora [v.1919] and Ranikhet [iii.1920] Divisions of Kumaon (*H. G. C.*).

Seven ♀ ♀, all but one from Ranikhet, are provisionally referred to *M. sikkimensis* Pic, the type of which is said to have the basal joints of the antennae pale beneath, these organs being entirely black in the specimens before me. This species belongs to Abeille de Perrin's Group 1, "Cardinales," and it is allied to the S. European and N. African *M. coccineus* Waltl.

Horsell, Woking.

March 1921.

OBSERVATIONS ON BRITISH COCCIDAE, WITH DESCRIPTIONS OF NEW SPECIES.*

BY E. ERNEST GREEN, F.E.S., F.Z.S.

No. VI.

Ortheziola vejtdorskyi Sulc.—This curious little insect was taken, in considerable numbers, under loose stones, at Minehead (Somerset), early in October. They were unassociated with ants of any kind. The same species was received from Mr. H. M. Hallett, who collected them, amongst moss, at Penarth (S. Wales), in the last week of November. Individuals of this later gathering were carrying short ovisacs which covered the under surface of the abdomen and projected slightly beyond the extremity of the body.

Orthezia urticae L.—Taken on stems of *Artemisia maritima* (Blakeney Point, Norfolk, 17.vii.1920) and on *Teucrium scorodonia* (Minehead, Somerset, 28.ix.1920).

Eriococcus inermis Green.—The particular grass upon which this species habitually occurs has now been determined as *Festuca ovina*. On rough land, where this grass predominates, the insect may often be found in abundance. I have sometimes collected over one hundred specimens in an area less than a yard square.

Eriococcus glyceriae, nov. (Fig. 1.)

Insects at first naked, of a rosy-pink colour, with a thin efflorescence of white powdery secretion; finally enveloped in a dense white ovisac.

* Continued from vol. lvi., pp. 114-131, May and June 1920.

Adult female (*a*) elongate-ovate; anal lobes reduced and scarcely differentiated. Antenna (*d*) 7-jointed, the joints relatively short and stout, 3rd longest. Eyes well defined. Legs comparatively small; tarsus approximately equal to tibia (*e*); claw long and slender; ungual and tarsus digitules slender, very slightly knobbed at extremity; a long slender seta on the trochanter, and two or three setae on each of the other segments of the limb. Posterior extremity (*b*) with a pair of long and slender caudal setae; anal ring with 8 setae, the longest of which is only about one-quarter the length of the caudal

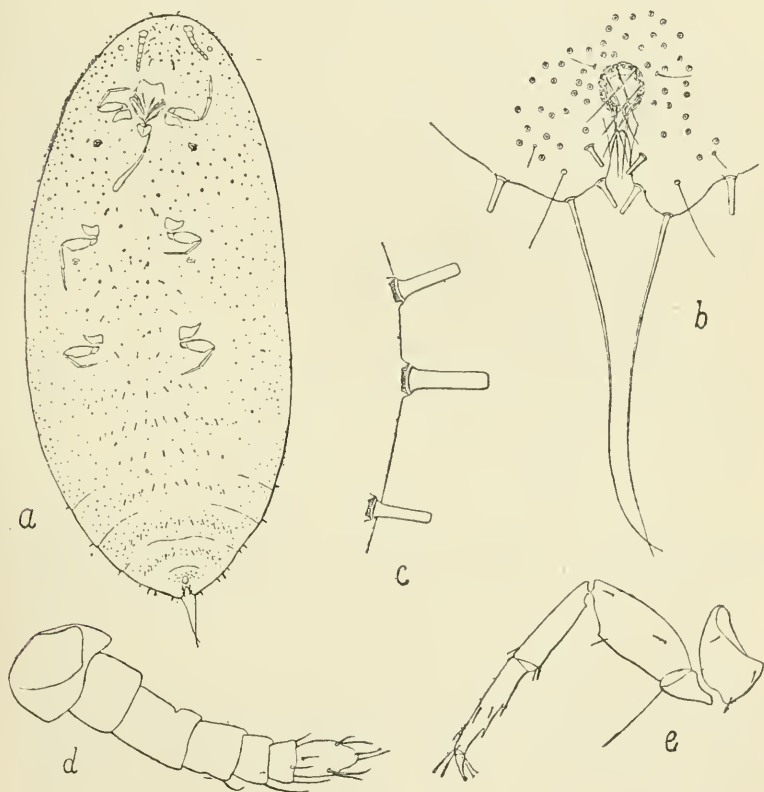


Fig. 1.—*Eriococcus glyceriae*. Adult ♀ : *a*, ventral view, $\times 30$; *b*, posterior extremity, $\times 220$; *c*, marginal spines, $\times 450$; *d*, antenna, $\times 220$; *e*, mid leg, $\times 130$.

setae. Spines (*c*) stout, cylindrical, truncate; from 8 to 11 on each side, confined to the margins of the terminal four or five segments of the abdomen (see fig. 1, *a*). The anal segment (comprising the anal lobes) bears 3 spines on each side; the penultimate segment carries 3 (rarely 4); each of the preceding three segments usually has a single spine only, though a second is not infrequently found on the antepenultimate segment, and the uppermost spine of the series is often absent. Derm with numerous thick-rimmed pores, more crowded towards the posterior extremity. A transverse series of short setae across the

venter of each abdominal segment, and some similar setae on the frons and on the median area of the thoracic segments. Length of fully mature female 2.5 to 3 mm. Breadth (under compression) 1 to 1.75 mm.

Ovisac white, densely felted, moderately convex when placed in an exposed situation, but usually depressed or flattened owing to its position amongst the crowded stalks at the base of the plant. Dimensions very variable, ranging from 2.5 by 1, to 4 by 1.5 mm.

On *Glyceria maritima*; Blakeney Point, Norfolk.

The insects occur at the base of the grass stems, sheltered beneath the leaf-sheaths. Their presence is made noticeable by a deposit of white pulverulent secretion. When first observed—in the month of July—before the formation of the ovisac, the insect was mistaken for a species of *Rhizococcus*; but examination of further material, in September, proved its correct position to be in the genus *Eriococcus*. The insect is practically of a subterranean habit, occurring more commonly below the surface of the sand in which the grass grows. The stems of the grass spring from underground rhizomes.

The species is well characterized by the limitation of the spines to the margins of the posterior segments only. Moreover, it is the only British species in which the spines are truncately cylindrical.

Eriococcus placidus, nov. (Fig. 2.)

Adult female long-ovate; anal lobes relatively small, but prominent, weakly chitinated. Antenna (*a*) 7-jointed, stout; 3rd and 4th longest, approximately equal. Eyes well defined. Legs relatively large; tarsus as long as or slightly longer than tibiae (*e*); claw (*f*) long, a minute denticle near the tip, on the inner edge; two unusually long and slender setae on inner edge of tarsus; apical spines on inner extremity of tibia unusually long; ungual and tarsal digitules long and slender, the former simple, the latter minutely knobbed at apex. Anal ring with 8 setae. Caudal setae long and stout. Dermal spines very few, confined to the frontal area and the anal lobes; three or four only on the frons (*c*), very slender and acutely pointed; three on each of the anal lobes (*d*), of which two, on the inner margin, are longer and stouter, while the third, on the dorsal face, is minute; no spines on any other part of the body, which is, however, sparsely beset with longer and shorter setae. Dermal pores numerous, of several distinct forms (*b*)—viz., trilocular pores (few), quinque-locular pores (numerous), large ring-shaped pores (numerous), and tubular pores with expanded rims (few).

Length 2.5 to 3 mm.; breadth 1 to 1.25 mm.

Ovisac large and conspicuous, strongly convex, of a greyish-ochreous colour; the outer covering loose and woolly, the inner parts unusually tough. They might be mistaken for small examples of the ovisacs of *Eriopeltis festucae*, in which the covering had become matted by exposure to weather.

Length 3.5 to 4.5 mm.; breadth 2 to 2.25 mm.

On the upper surface of leaves of a grass (? *Festuca* sp.); Thurnham, Kent, S.ix.1920.

Differs from *inermis* in its much greater size, in the presence of a

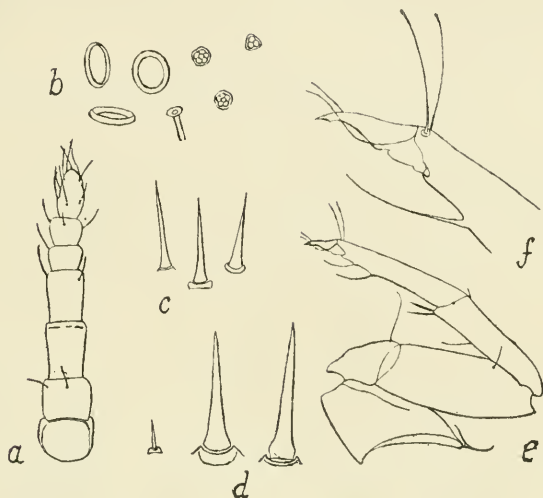


Fig. 2.—*Eriococcus placidus*. Adult ♀ : *a*, antenna, $\times 135$; *b*, dermal pores, $\times 450$; *c*, spines from frontal area, $\times 450$; *d*, spines of anal lobes, $\times 450$; *e*, mid leg, $\times 130$; *f*, claw, $\times 450$.

few spines on the frontal area, in the character of the dermal pores, and in the form and texture of the ovisac.

Eriococcus pseudinsignis, nov. (Fig. 3.)

Adult female elongate, rather narrow; anal lobes rather small, weakly chitinized. Antenna (*c*) 7-jointed; the 4th usually longest, occasionally equal to 3rd; 7th varying in length, either shorter or longer than the 6th. Legs relatively large and well developed; tibia and tarsus of approximately equal length; apical spine of tibia unusually long; claw (*b*) with a very minute (scarcely perceptible) denticle near its extremity; ungual digitules long and slender, minutely knobbed; tarsal digitules long and dilated at extremity. Caudal setae long and stout. Dermal spines confined to the marginal areas, with the exception of a few which occur on the median area of the thorax; disposed in a single series (in groups of three) on the abdominal margin (*d*), but tending to become irregular and diffused on the margins of the thorax; irregularly crowded on the frontal area (*a*); those of the medio-thoracic area (*e*) much smaller than those on the marginal area (*f*). Venter with transverse series of slender setae, longer and irregularly disposed on the frons. Derm with numerous tubular pores (*g*), the inner extremity of each pore with a thickened rim; no trilocular pores.

Length 2 to 2.5 mm.; breadth 1 mm.

Ovisac elongate-ovate, narrower towards the posterior extremity, whitish or pale ochreous; of compact, close texture.

Length 2.5 to 3 mm.; breadth 1.25 to 1.5 mm.

On upper surface of leaves of a grass (? *Festuca* sp.); Thurnham, Kent, Sept. 1920.

The ovisacs are almost invariably placed at the junction of the

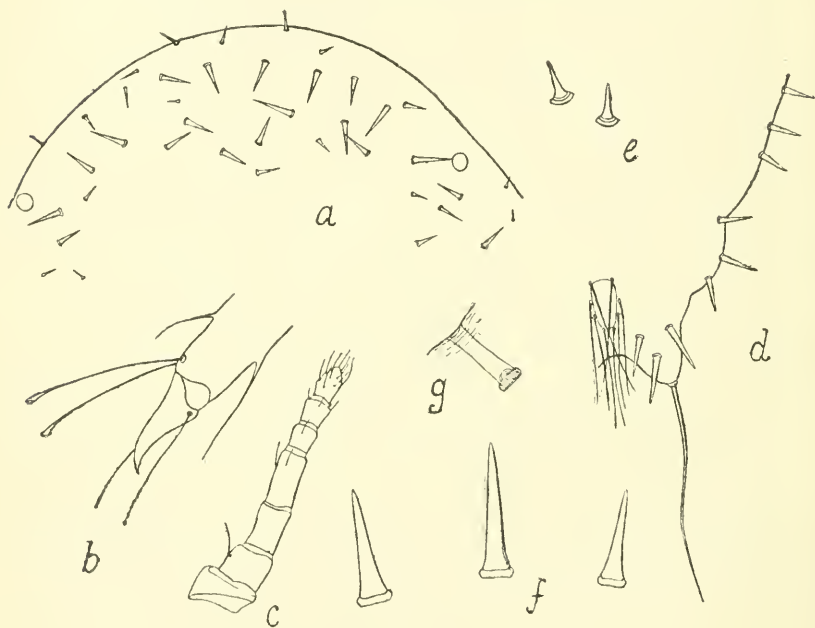


Fig. 3.—*Eriococcus pseudinsignis*. Adult ♀ : *a*, anterior extremity showing disposition of spines, $\times 135$; *b*, antenna, $\times 135$; *c*, foot, $\times 450$; *d*, posterior extremity, showing disposition of spines, $\times 135$; *e*, spines on median area of thorax, $\times 450$; *f*, spines from margin of abdomen, $\times 450$; *g*, one of the tubular pores, $\times 450$.

blade with the stem of the grass, where they are practically concealed from view.

The species is closely allied to *insignis*; but may be distinguished by the more irregular disposition of the marginal spines, by the larger number and greater diffusion of the spines on the frontal area, and by the presence of small spines on the median area of the thorax. The marginal spines are markedly smaller than those of *insignis*, and are arranged in groups of three (instead of four or five) on the abdominal segments.

Phenacoccus aceris Sign.—On stems of peach-trees (under glass); Lyme Regis, Dorset, 12.iv.1920. The insects were then fully grown, and had constructed their ovisacs by the middle of the month; while the same species, on gorse, in the open, was still in the nymphal stage. I can find no previous record of the occurrence of *Phen. aceris* upon peach-trees.

Pseudococcus gahani Green.—On *Ceanothus* sp. (apparently *veitchii*); Somerset, v.1920. Mr. N. Cunliffe, to whom I am indebted for the specimens, reports that the plants were very heavily infested, four large bushes being nearly ruined by the attacks of the insects. The plants were growing in the open, two of them trained against a wall.

It is noticeable that these examples do not respond to irritation by exuding drops of dark-coloured fluid, as was observed with the original examples from *Ribes*.

Pseudococcus walkeri Newst.—I have found examples of this species on several occasions inside the stems of grasses, where they had formed their ovisacs. The insect on each occasion had crept into the broken end of the stalk, where it was under such close compression that the body had assumed a cylindrical form which completely plugged the hollow.

Prof. Newstead, in his description of the species (Mon. Brit. Cocc., ii, p. 169), gives no particulars of the ceriferous tracts or of the cerarial spines. I find that the former are 34 in number (17 on each side of the body), each of which carries a pair of spines and a group of ceriferous pores. The pores on the frontal and anal cerarii are more numerous and crowded, as might be expected from the size of the waxy processes associated with those areas. The anal cerarii are further characterized by a large, circumscribed, heavily chitinized patch, and by the size of the spines, which are many times larger than those on the other cerarii. The second tract, on each side, is often rather obscure, and the spines associated with it have a tendency to become setiform.

Pseudococcus maritimus Ehrh. (Fig. 4.)

Syn. *Pseudococcus longispinus latipes* Green, Ent. Mo. Mag. liii, p. 264, Nov. 1917.

The supposed variety of *Ps. longispinus*, described in this Journal four years ago, is referable to *maritimus*.

In my note (E. M. M., June 1920, p. 121) on the occurrence of *Ps. maritimus* in this country, I omitted to draw attention to a striking character noticeable on the third pair of legs. It will be seen

from the accompanying figures (*a, b*) that the tibia of this limb is markedly dilated, and that its outer area is crowded with minute circular pores. Similar but more scattered pores occur on the inner area of the femur. The anterior and mid limbs are without either of these characters. This dilation of the tibia does not, however, appear to be a strictly specific character, for of American examples received from Mr. G. F. Ferris, some exhibit this structure while others do not.

I have for some time noticed the presence of such pores on the hind limbs of various Coccidae, sometimes on the coxae, sometimes on the femur, or, as in *maritimus*, concentrated on the tibiae; but have not

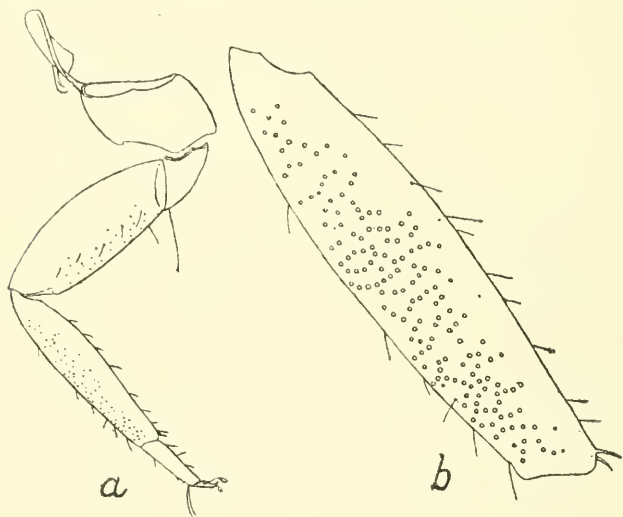


Fig. 4.—*Pseudococcus maritimus*. Adult ♀ : *a*, hind leg, $\times 80$; *b*, tibia of hind leg, $\times 220$.

observed them on either the anterior or mid limbs. Analogous characters, in the form of translucent maculae, are to be found on the hind coxae of many species of *Eriococcus*. Their repeated presence, on the hind limbs only, suggests that these pores must have some function, possibly in connection with the process of oviposition.

Ps. maritimus was recorded (in the British Isles) from a greenhouse in Camberley, last year only; but has probably been an unrecognized occupant of our glass-houses for some time past. I found it, in April of last year, infesting plants of *Nerium* and *Abutilon* under glass at Truro (Cornwall), and I have examples of the same species from conservatories in Manchester.

(To be continued.)

Hylastes attenuatus Er., and other *Coleoptera* in the New Forest.—This distinct little Scolytid, introduced last year by Dr. Sharp as a British species (E. M. M., vol. lvi, p. 205) appears now to be well established in the New Forest. It was found fairly commonly by me in several widely-separated localities, burrowing into the soft inner bark of fresh stumps of spruce and Scots pine, in company with the commoner species of the genus, which in some cases it outnumbered. I also found it under the bark of a large trunk of Scots pine in a timber-yard near Brockenhurst, and occasional specimens turned up in the sweeping-net. Besides the species already noted from the Forest (*antea*, p. 143), my captures between May 20th and June 9th include single specimens of *Eucnemis capucina*, *Elater minutus*, *Cistela ceramoides*, and *Melandrya barbata* walking on decayed beech timber, which becomes in every successive year more difficult to find; *Zengophora flavicollis*, one, beaten off tall aspens in Matley Bog; *Corticaria fenestralis* (common), *Cryptophagus cylindrus* (1), *Rhinomacer attelaboides*, and *Pissodes notatus* by beating Scots pine; *Abdera bifasciata*, not uncommon on one oak at the entrance of Queen's Bower, and *Geotrupes pyrenaicus* on the wing at Mark Ash. The 21 species of Longicornes met with include *Mesosa nubilata*, *Tetropium fuscum*, *Asemum striatum* (which has become one of the commonest Forest beetles, its exit-holes being visible in very many of the innumerable pine-stumps), both the southern species of *Pogonocherus*, *Leptura scutellata*, *Anoplodera sexguttata* (these two species less common than usual), *Grammotera praeusta* (scarce), *Callidium alni*, etc. From the exceedingly scanty hawthorn-blossom I managed to beat a short series of *Ischnomera sanguinicollis*, as well as *Rhynchites pauxillus*, *coeruleus*, and *interpunctatus*. *Athous rhombeus* and its pupa occurred sparingly in decayed beech at Mark Ash and elsewhere; *Pediacus dermestoides* turned up on several occasions at running sap of a Cessus-oak, at which I found the largest and most finely-developed ♂ *Necrodes littoralis* that I have ever seen. Several fine fresh specimens of *Cleonus nebulosus* were met with in the well-known little sand-pit at Matley Passage. Sweeping, probably owing to the prevailing drought, was by no means productive, the best species taken by this method being *Antherophagus pallens* ♂, *Corymbites bipustulatus*, *Dasytes niger* (exceedingly local), *Mantura obtusata*, *Anoplius roboris*, etc. I was very sorry to find that the special locality for *Tychius quinquepunctatus* had been practically destroyed as the result of timber-hauling, and not a single example of this pretty weevil was seen during my visit. An excursion to Poole Harbour resulted in the capture of a good series of the usually northern *Bledius fuscipes*, accompanied by *Dyschirius politus*, *Bembidium pallidipenne*, etc.; and *Gymnusa brevicollis* occurred quite commonly by sweeping the herbage in a marshy place.—JAMES J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford: June 18th, 1921.

Baris scolopucea Germ. in Sussex.—It seems advisable to record the capture of *Baris scolopucea* at Bosham, near Chichester, on August 17th last year, as it is a new locality for this very local weevil. I found it, when collecting with Harwood in a salt-marsh, by sweeping its food-plant, the Sea Purslane, *Atriplex portulacoides*. Subsequently Harwood secured a long series, and he has asked me to publish the record. As is well-known, this rare beetle was first discovered in Britain by Mr. Champion in 1870, who took it in some numbers

at Queenborough. Subsequently Commander Walker found it in plenty at Shellness, Isle of Sheppey [see Ent. Mo. Mag. xxii, 196 (1896)]. In an interesting list, published as a supplement to the "Victoria County History of Sussex," by Messrs. L. G. Cox, G. B. Ryle, and C. E. Tottenham [Ent. Mo. Mag. lvi, 228-31 (1920)], the authors enumerate a number of beetles new to the Sussex List. Among these, however, are two species which have been recorded for the county before—namely, *Liparus coronatus* Goeze, taken by me at Great Salvington and Goring, and *Codiosoma spadix* in "sea-breakers" at West Worthing [see Ent. Rec. xxix, 226-28 (1917)]. *C. spadix* was also taken by B. G. Rye at Lancing early in the 'nineties, and is recorded in the supplement to "Fowler."—HORACE DONISTHORPE, Putney: June 1921.

Henoticus serratus, etc., at Peebles.—On May 26th I observed on a stump in a wood here, which was cleared last year, a specimen of *Henoticus serratus* Gyll. Further search on the 27th, 30th, and 31st led to the discovery of six more examples of this rarity, under bark of beech stumps. On May 26th I took a single example of *Homalium exiguum* Gyll. amongst dead leaves by a fallen birch-tree, together with three *Quedius fumatus* Steph. On 4th June, in the same wood, I obtained under fir bark a single example of *Dryocetes autographus* Ratz., and in fungoid growth beneath a fallen birch-tree one specimen of *Sphaerites glabratus* F.—JAMES E. BLACK, Nethercroft, Peebles: June 8th, 1921.

Silpha quadripunctata L. hovering.—My personal experience of this species shows it to be so rare and local, though of wide distribution, that observations upon its habits must be difficult to come at. By glancing through my diaries since 1889, I find that it has invariably occurred to me singly, till 1921: in 1894 it turned up in Holbrook Park, Suffolk; in 1895 on oak in a fir-wood at Beaulieu in the New Forest; and from 1896 to 1902 annually by beating oak and birch and white poplar in the Bentley Woods near Ipswich. It does not seem to have been taken in Norfolk since Burrell's time, about 1810. Stephens says the imago may be taken during June and July; but Samouelle, who gives a good figure (as also does Martyn in 1792), more correctly refers it in 1819 to May and June. My own dates range only from 17th May to 11th June, during which time it has been taken at Bentley also by Elliot, Vinter, and Baylis. It is a widely distributed species with us, and Von Heyden's 1906 Catalogue ranges it through "*Europa media borealis*" under Thomson's generic name *Xylodrepa*. The remarkable point about the species is that it is never found in carrion; nor have I till this year seen it on the wing. But on 18th May last, three occurred to me flying low over young bracken at Bentley; and on 25th I was much interested to see some half-dozen hovering, like *Bombi*, at the extremities of both oak- and pine-twigs some twelve feet from the ground there. They showed no propensity to alight; but, as the oaks were being badly defoliated by *Tortrix viridana*, I expect the explanation is to be found in Calver's 1869 note that this species, like *Calosoma*, attacks the nests of *Bombix processionea*; also, probably, any other Lepidopterous larvae when in undue quantities.—CLAUDE MORLEY, Monks' Soham House, near Framlingham: 30th May, 1921.

Another Early Season.—It is rarely that we have two consecutive winters and springs so mild as have been the past two, and in both cases the effect on

Lepidopterous life was marked. In South-west Yorkshire, *Phigalia pedaria*, *Hybernia leucophaea*, *H. rupicapra*, and *H. marginaria* were all out this year in January. On April 23rd *Fidonia atomaria* was out on the moors near Huddersfield, and on April 30th *Acronycta menyanthidis* (even the females) was well out on the same moors, when also *Phoxopteryx myrtilana* was on the wing. I do not remember ever seeing these two species so early on our bleak moorlands. *Hadena glauca* appeared a few days later. The mild weather has continued longer this year than last; indeed, there has been scarcely a break in it up to the present time.—GEO. T. PORRITT, Dalton, Huddersfield: June 7th, 1921.

[The following butterflies were first observed on the wing by myself during the present season—*Cyaniris argiolus*, Oxford, March 30th; *Euchloe cardamines* ♂, Tubney, Berks, April 13th; *Brenthis euphrosyne*, Wheatley, Oxon, fully out May 12th; *Plebeius aegon*, Brockenhurst, June 7th; *Limenitis sibylla*, Matley, New Forest, June 8th; *Strymon pruni*, near Oxford, June 15th; *Melanargia galathea* (1) and *Argynnis adippe*, not rare, Tubney, June 17th; *Ephipphele tithonus*, Tubney, June 28th.—J. J. W.]

Does Scenopinus fenestralis De G. (Diptera) hibernate?—My long series of this distinct species from various Suffolk localities was captured between 1st July and 10th September: in 1914 the first one appeared on 3rd July. Verrall gives it a perfect span from June 5th to only August 11th, and draws especial attention to the frequency with which the apices of the females' wings were "broken off." This "Carpet Fly" seems of sufficiently local distribution in Britain to have escaped particular attention, yet it is rather strange that its earliest recorded date should not be before June, if it really hibernates. This year I was delighted to find the female on my study window here so early as 3rd of May, with the wing-tips mutilated. If indeed it hibernates, which has not hitherto been suggested, on account doubtless of its midsummer appearance, the circumstance would account in several ways for the alar mutilation: e.g., gnawing by *Psocids* just where the tips overlap the abdomen throughout the winter. This, too, would account for the immunity of the male, which perhaps does not hibernate.—CLAUDE MORLEY: May 30th, 1921.

Some news of the Russian entomologists.—After an interval of several years authentic news regarding the fate of certain Russian entomologists has recently reached this country. It appears that a great number of them died during those years from different causes, mostly from typhus and several from starvation. The Russian Entomological Society has lost about 50 of its Fellows, amongst them several very prominent men. The names of the better known deceased Russian entomologists are as follows:—Dr. N. Adelung, keeper of *Orthoptera* in the Petrograd Zoological Museum (died 23.xi.1917); Sergius Alferaki, a well-known Lepidopterist (died 27.vii.1918); V. Bianki, ornithologist of the Petrograd Museum, who also did some good work in entomology (died 10.i.1920); Prof. E. Vassiljev, economic entomologist (died vii.1919); N. A. Zarudny, a distinguished traveller and explorer of Central Asia and Persia (died 13.iii.1919); B. Karavajev, myrmecologist (died in 1919); N. Kurdiunov, who has been the leading figure in Russian agricultural entomology (shot himself dead, 7.ix.17, on the front, being driven into despair

by the wholesale desertion of soldiers and fraternization with enemy); V. Oshanin, Hemipterist (died 26.i.1917); T. Porchinsky, Chief of the Entomological Bureau of the Ministry of Agriculture (died 8.v.1916); N. M. Romanoff, late Grand Duke, Lepidopterist (died 29.i.1919); A. Silantiev, economic entomologist and zoologist (died 21.iii.1918); D. Smirnov, Coleopterist and economic entomologist (died 17.viii.1920); A. Sopotsko, economic entomologist (died 1.iv.1919); J. Schreiner, economic entomologist (died vii.1918); Prof. N. A. Cholodkovsky, a well-known zoologist and entomologist (died 2.iv.1921); Th. Stecherbakov, economic entomologist (died ix.1920); T. Shevyrev, Chief of the Entomological Laboratory of the Forest Department (died from starvation, 7.vii.1920). From this incomplete list it may be seen that Russian entomology has suffered very heavy losses. Nevertheless, and in spite of the most terrible conditions of existence, the Russian Entomological Society and the staff of the entomological department of Petrograd Museum never ceased their scientific work. The latter is, however, seriously hindered by the lack of current literature. In fact, no scientific papers and books published since 1915 have reached Russian entomologists, and they feel themselves hopelessly behind the progress of science. Even now, when the postal communication between this country and Russia is resumed, our Russian colleagues cannot hope to get magazines and books published during 1915-1921, since the rate of exchange of Russian money is so low as to make any purchase of scientific publications entirely out of the question. They ask, therefore, their British colleagues to help them in this difficulty by sending back numbers of magazines, books, and separate reprints of papers for the library of the Russian Entomological Society. Every publication, however small, will be accepted with the sincerest gratitude and read with the greatest interest by those of our colleagues who are starving, not physically only, but mentally as well. All papers and books may be sent direct to Mr. G. Jacobson, Secretary of the Russian Entomological Society, Zoological Museum, Academy of Sciences, Petrograd, Russia; or to Mr. B. Uvarov, British Museum of Natural History, Cromwell Road, London.—B. UVAROV: *June 7th, 1921.*

A new Finnish Entomological periodical.—We have just received Part 1 of "Notulae Entomologicae," Helsingfors, 1921. It is edited by the Entomological Society of Helsingfors, and will appear in 4-5 numbers annually, or wholly in 8-10 sheets. The commencing number contains 32 pp. of letterpress, and includes the following papers amongst others:—*Coleoptera* by J. Sahlberg (*Coleoptera Fennicae nova*, 1, *Hydroporus* 4 n. spp.), R. Kleine (*Brentidae* in the Helsingfors Museum, a list of 18 spp., with one n. gen., *Synorychodes*, type *S. opacus*, Ceylon), and R. Krogerus (*Nordischen Simplicaria*-Arten, with one n. sp., *frigida*, Lapland); *Hemiptera* by Dr. E. Bergroth (*Halyomorpha* Mayr and allied genera, with one n. gen. *Allebola*, type *Tropicorypha denticollis* Bredd., and one n. sp., *Halyomorpha magnifica*, E. Africa); *Hymenoptera* by Å. Nordström (on *Pompilidae*); and *Lepidoptera* by H. Rudolph (on *Lasiocampa quercus* L., with figures). There are also lengthy obituary notices of John Reinhold Sahlberg (with portrait), K. A. Poppins, and Veli Kurt Abt; general notes; a review of Patton and Cragg's Textbook of Medical Entomology, etc. The annual subscription is 8/-, which can be sent to Mr. H. Rudolph, Alexandersg. 13, Helsingfors, Finland.—Eds.

Review.

"LES COLÉOPTÈRES D'EUROPE: FRANCE ET RÉGIONS VOISINES." Par C. HOULBERT. Tome premier avec 104 figures dans le texte et 16 planches. Paris: Librairie Octave Doin. 1921. Price 12 francs.

This little book, which is the first of a series of three volumes intended for the use of students in determining the families and genera of European beetles, is not one to which we can give unqualified praise. That part of it which treats of the external morphology and internal anatomy of beetles contains a considerable amount of interesting and instructive matter, and had a little more care been taken in its preparation, would have formed a very good introduction to the study of the *Coleoptera*. Here and there statements are to be found in it which need qualification or correction; and there is one which in a book published in 1921 ought not to have appeared: "The neururation of the membranous wings shows a disposition so uniform in the *Coleoptera* that it has not hitherto appeared possible to make any use of it in classification; there is scarcely any variation except in the position and dimensions of the costal fold." The few paragraphs devoted to the male genital armature of beetles are not very helpful, and the figure (after Sharp), given by way of illustration, is wrongly labelled *female* instead of male. The systematic part of the volume gives an arrangement of the families in ten phyletic series beginning with the Carabidien and ending with the Prionidien, and analytical tables for the determination of all the families, as well as for those subfamilies and genera which are included in the first phyletic series. Representative species of the different families and genera and their larvae are figured on the plates or in the text, and notes relating to the habits, etc., are to be found under each subfamily or genus.

Prof. Houlbert has grouped the families in accordance, he says, with the principles he had expounded in 1894 in his "Phylogénie des Coléoptères." One of his phyletic groups—the Chrysomélidien—includes the following: *Georyssidae*, *Parnidae*, *Heteroceridae*, *Gyrinidae*, *Hydrophilidae*, *Erotylidae*, *Endomychidae*, *Coccinellidae*, and *Chrysomelidae*. His faith in the principles which have led to that remarkable association of families, and his adherence to it in spite of all that has been written on the classification of *Coleoptera* since 1894, may well give rise to astonishment. His tables for the determination of the families not only do not reach perfection, as he himself admits; they will hardly even fulfil his own modest hope of their usefulness. Let a student try by their aid alone to give the family name to a *Cebrio*, a *Ptilinus*, a *Meloe*, a *Bruchus*, a *Mordella*, a *Lagria*, or a *Leptura*: it will be almost a miracle if he succeeds.—C. J. GAHAN.

Obituary.

George Blundell Longstaff, M.A., M.D., F.L.S.—On May the 7th last, after a long illness, died at his residence, Highlands, Putney Heath, Dr. George Blundell Longstaff in his 73rd year. The funeral, attended by a large gathering of relations, friends, Fellows of the Entomological Society of

London, and others who had been associated with him from time to time in work of various kinds, took place on the following Thursday at Putney Vale Cemetery.

So passes the oldest and one of the dearest of my friends; and from among contemporary British entomologists surely one of the most enthusiastic, generous, and personally attractive votaries of the science that engages our study. What Longstaff did for Entomology—more specially what he did for the work and collections in the Hope Department of the Oxford Museum—I will leave Professor Poulton to say. On such points he will speak with authority. In this memorial note which the Editor has so kindly asked me to contribute, I confine myself to a slight appreciation of the character of my friend as it impressed itself upon me with increasing force through a close unbroken intimacy of over fifty years.

It was in the October term of 1868 that he and I first met as Freshmen at New College, Oxford. Two main interests brought us into companionship—a love of Art, and a love of Natural History. Longstaff had come up from Rugby, having gained at New College an open Natural Science scholarship. During his school years he had devoted much serious care to observing insect life alike in the neighbourhood of Rugby and his home at Wandsworth. And here it is interesting to note how thus early it was the difficult group of the *Tortricina* which peculiarly attracted him; so that, indeed, he became filled with an ambition of some day specializing upon it, and producing a standard work dealing exhaustively with the group. Alas! *dis aliter visum*. He had not been long an undergraduate before a shocking accident deprived him of the sight of one of his eyes, and put a stop for ever to all such schemes of scientific study as would involve close microscopic investigation. Well, the way in which he bore this bitter stroke of fate was characteristic of him. Far from sitting down a disheartened rebel, he at once pulled his energies together, and addressed himself cheerfully to other lines of study and work for which minute eyesight was not indispensable.

Certainly this indomitable cheerfulness or buoyancy of temperament, united as it was with an unusual power of perseverance, and what one may without exaggeration call a passion for thoroughness, went far towards keeping George Longstaff throughout his life not only the busiest of men, but the most enthusiastic and youthful. No one came across him even to the last but was struck by his alert vivacity, both physical and mental. It was hard to associate him with the thought of age. Let me here illustrate this by reference to a little incident. When the London County Council was first established, Longstaff was elected one of its members; and, when later on the difficult business of bringing in the New Building Act occupied its attention, he was appointed chairman of that important committee. I remember one day asking a builder on the Council whether he chanced to know my friend. "Know him!" he replied, "I should think I did. Why, somehow or another, Dr. Longstaff has learned to understand pretty well as much about the practical side of the building trade as we builders ourselves do!" Of course he had. For indeed George Longstaff was a man who never did anything by halves. Whatever he took in hand, he would first of all set himself to find out all he could about the nature and right conduct of it, and then go on seriously to see the thing

through. This surprising thoroughness was assuredly a leading note in his character. But to those who had to work with, or for, or under him, it led to no hectoring dominance of behaviour. It was balanced by an equally surprising kindness of heart, by a sympathetic understanding and consideration of other people's ideas, and by a true man's regard for their knowledge, individual point of view, and sincerity of effort.

Supposing that eye-accident at the outset of his career had never happened. Well, I have sometimes asked myself—what then would my friend have done and become? Possibly he would have devoted himself to science exclusively. Nay, I fancy indeed this more or less was his ambition. And with his intellectual alertness, his patience and accuracy in observation, his determined thoroughness, supplemented, as these would have been, by means at hand enabling him to prosecute his investigations unrestrictedly—there is no doubt he would have gone far, establishing himself as an enviable authority in this or that chosen specialized department. Yet, after all, would he have thus served his nation better than he actually did serve it? May it not be that the very restrictions and diversity of interests this apparently most lamentable misfortune imposed on him, only rendered his life's service the more valuable by compelling it to be more varied and diffusive?—SELWYN IMAGE: *May 22nd*, 1921.

The late G. B. Longstaff.—There is little for me to add to the excellent and appreciative notices of my friends, Professors Poulton and Selwyn Image. My relations with George Longstaff began in the year 1878, when I joined him in some work on the germicidal properties of certain advertised disinfectants, and afterwards collaborated with him in many investigations in the Registrar-General's Department of Somerset House, which afterwards bore fruit in his published volume of "Studies in Statistics." It was not long before we discovered each other's interest in entomology, and from that time we became constantly associated in the pursuit of that branch of natural history. I was with Longstaff when he acquired the beautiful estate in North Devon where much of his life was passed, and I well remember the keenness with which he threw himself into the study of the Lepidopterous fauna of the district. His published list of the Mortehoe *Lepidoptera* embodies the result of many years' assiduous collecting and observation, conducted under the serious difficulty of impaired eyesight. He was an admirable field naturalist—patient, active, and enterprising. He had a sovereign contempt for what he called "feather-bed sugaring," and some of our nocturnal expeditions among the North Devon cliffs were not unattended with danger to those less sure-footed than himself. His "Butterfly-hunting in Many Lands" contains ample evidence of his interest in the scientific bearing of the facts which he amassed with so much energy and insight. Of his quality as a student of tropical fauna I had good reason to judge in the course of the travels that we undertook together in South Africa, a record of which forms part of the work last mentioned. It was characteristic of him that so soon as any point of biological importance was brought to his notice, he at once began to consider how far it might be illuminated from entomological data, and to devise plans for acquiring and making available the necessary evidence. In carrying out these plans he found scope for the

operations of an unusually active mind and a thoughtfully generous disposition. "Large was his bounty, and his soul sincere."

A man of such wide interests and so sympathetic a nature was bound to make hosts of attached friends, by whom his death is felt as a grievous personal loss. "*Exstinctus amabitur idem.*"—F. A. D.

Although Dr. G. B. Longstaff's name was well known to me as that of an Oxford man distinguished for his public service, an authority on statistics, and a generous benefactor inspired by far-reaching sympathies, our friendship only began in 1904, after his return from his travels in the East. From that time we met continually, both in Oxford and London, and he was always planning to help the Hope Department in many ways. He realised at once, what is often forgotten by those who give to museums, that the captures he was sending in thousands meant labour and time, and that the Department, like most, I might say all, museums, was understaffed. So, after giving immediate help to meet the extra strain, he made it possible in 1895 for the Department to employ an additional assistant, contributing the salary each year until 1909, when, by an endowment of £2400, he assured its permanence. The trust deed is a model one in its simplicity and in the care to ensure that, whatever may happen in the future, the income of the fund will always be of the highest utility to the Hope Department. Then he would often buy books for the library and would send lists of works in his possession in order that the Department might select what it needed. In 1910 his help made it possible to acquire the fine collection of British *Rhynchota* made by the late Edward Saunders, F.R.S.

But George Longstaff did far more than this for the University Collections at Oxford. What I have spoken of above—as also his generous gift of £1000 to the Entomological Society shortly before his death—could have been done by any rich man, although too few in this country are inspired to use their wealth for such ends. Longstaff gave also the personal service of an able and intensely active mind. In planning his travels he would consider the needs of the collections. Then, before setting out on his second journey in 1905, he devised a special form of note-book, strongly bound with leather back and corners, ruled for date and locality and notes. Eleven of these exist in the Department, and, from their data, each specimen has been labelled with all essential facts, and also by a reference number can be compared with the original record. It is pathetic to look at the last entries, made with difficulty and failing sight, about a year before his death. Then, when he returned home he would work out his collections, continually visiting the British Museum for the purpose, and would come to Oxford for their incorporation. In 1907 and 1908, realizing how greatly we were handicapped by the want of an up-to-date catalogue of *Satyrinae* and *Hesperidae*, he set to work and made a complete list of all the species of both groups in the British Museum. His manuscript list of *Hesperidae* contains 2244 species. Indexed by the late Robert Shelford, and bound, it has been of the greatest value. It is in constant use.

Although our friendship sprang from scientific interests in common, one could not come into contact with George Longstaff without feeling the stimulus of an intensely active, energetic, sympathetic nature. There was his

public spirit and energy during the war, his interest in the police and in institutions for the insane, his love of art and of his garden and the beautiful open space around it. I shall always think with pleasure of the last time I walked with him in his garden, in the summer of 1920, and of his delight in recognizing a "Large Skipper" behind the rockery.

His was, we may be sure, a very happy life, and many are happier because of it.—E. B. P.

It may be added that Dr. Longstaff's association with our Magazine commenced with the first volume, in which a brief note on *Lepidoptera* taken near Wandsworth appears on p. 76. Further articles by him are scattered through our earlier volumes, including very interesting papers on the *Lepidoptera* of Rannoch, in conjunction with the late J. B. Blackburn (vol. v, pp. 221-223), and of Forres (vol. vi, pp. 214-216). In more recent years his contributions to our pages include the narrative of his collecting experiences in Venezuela (vol. xlv, pp. 69-76, 118-123) and in the Egyptian Sudân (vol. xlvii, pp. 119-127, 194-202), which are embodied in his fine work "Butterfly Hunting in Many Lands"; and a valuable paper, supplementary to the section dealing with that interesting subject in the same book, "Further Notes on the Scents of Insects" (vol. l, pp. 1-8).

Dr. Longstaff was a Fellow of many learned associations, including the Linnean, Geological, and Entomological Societies; of the last-mentioned, which he joined in 1904, he was Vice-President in three separate years, 1909, 1915, and 1917.—Eds.

Robert Charles Wroughton, as stated in the June number of this Magazine (p. 143), died on May 15th. He was a son of Major-General R. C. Wroughton, and was born at Nusserabad, India, on Aug. 15th, 1849. Educated at Bedford School and King's College, London, and trained at L'Ecole Forestière, Nancy, France, he was appointed to the Indian Forest service on Dec. 10th, 1871, as Assistant Conservator of Forests in the Bombay Presidency, and eventually became Inspector-General of Forests for India, retiring in 1904. In 1877 he married Mary, daughter of Capt. Freeman, of the Indian Navy. During his long residence in India he paid a great deal of attention to the ants of that country, forwarding specimens from time to time to A. Forel, who named and described many of his captures, some of these insects subsequently passing into our National Collection. A paper by himself, entitled "Our (Indian) Ants," appeared in the "Journal of the Bombay Natural History Society," 1891-92.

Since his retirement he has spent a great deal of time at the Natural History Museum, working at the smaller Mammalia. Not long back he went for a change to Estcourt, Natal.

Albert Fauvel.—In the "Bulletin de la Société entomologique de France," 1921, No. 5, March 9th, p. 57, there is a brief announcement of the death of this veteran entomologist. He joined that Society in 1861, and was elected an Honorary Member in 1905. He wrote chiefly on *Staphylinidae*, and his last paper on these insects appeared in 1909.

THE BRITISH SPECIES OF THE ANTHOMYID GENUS
LIMNOPHORA DESV. (DIPTERA).

BY J. E. COLLIN, F.E.S.

(Continued from *antea*, p. 100.)

Tables of the Species

*based upon characters exhibited in the males, to be followed by
a separate Table of the females.*

Subgenus SPILOGONA.

- 1 (10) Normally only three pairs of postsutural dorsocentral bristles on thorax.
- 2 (5) Frons wide, being at narrowest part 2-3 times as wide as third antennal joint. Frontalia 2-3 times as wide as a frontal orbit.

In the case of doubt with regard to the characters of this section:—*litorea* is the only species without posteroventral bristles about base of hind femora, and *sarda*, though resembling *contractifrons*, has the abdomen more dorso-ventrally compressed.

- 3 (4) Arista subplumose, the longest hairs above and below together about as long as third antennal joint is wide. Thorax greyer in front and consequently with the narrow central dark stripe more distinct. Hind femora with no posteroventral* long hairs.

.... 1. *litorea* Fln.

♂. Jowls deep, rather more than a quarter the vertical diameter of eye. The two pairs of vertical bristles distinct from the post-ocular ciliation. Thorax brownish-grey, appearing greyer when viewed from behind, with blacker side patches over the root of each wing and a broad light grey notopleural stripe. Abdomen viewed from behind usually rather light brownish-grey, the dark patches on second segment larger than on third, and on both segments rather elongate and not much broader behind than in front; fourth segment often somewhat darkened about the middle. Front tibiae usually without a bristle behind; middle tibiae with a small anterodorsal, and two rather longer posterodorsal bristles; hind tibiae with 2-3 anterodorsal, 2 anterodorsal, and 1-2 smaller, less outstanding, posterodorsal bristles. Hind femora with 3-4 anteroventral long bristles towards the tip, but short-haired posteroventrally. Wings slightly yellowish-brown. Halteres yellow.

♀. Interfrontalia reaching almost to front of frons. Thorax greyish with a narrow central and two broad brownish side stripes (one at each side), these latter each with a tendency to split up into two stripes behind. Scutellum greyish about centre of disc. Abdomen broad ovate, greyish, with shorter, broader, and more indistinct brownish spots. Bristling of the legs as in the male, but bristles stronger and front tibiae with a bristle behind.

Length 5-6 mm. ~

* Care must be taken not to confuse the outstanding ciliation of long hairs, so often present about base of hind femora *behind*, with the posteroventral ciliation.

A northern species taken sparingly by the late Mr. Verrall at Tongue and Lairg (Sutherland) in June, and at Rydal and Windermere (Westmorland) in July. Col. Yerbury also caught a male at Lochinver (Sutherland) in July 1911. Mr. H. W. Andrews, however, appears to have taken a single male in the Thames Marshes (Kent) on June 11th, 1910.

- 4 (3) Arista only pubescent. Thorax darker in front and with only an indistinct central stripe. Hind femora with posteroventral long hairs
 *2. *surda* Zett.

♂. Resembling *litorea*, but arista much shorter-haired and fronta orbits narrower. Thorax all darker, especially not so grey in front, slightly shining. Abdominal dark patches less distinct and more variable in outline according to the point of view. Leg bristles as in *litorea*, but often only one posterodorsal bristle to middle tibiae and hind femora with long fine posteroventral hairs on basal half.

♀. Interfrontalia less distinct than in *litorea* and not so produced forward. No very distinct occipital grey patch behind ocellar triangle. Thorax darker and five-, rather than three-striped, slightly shining. Abdominal patches still less distinct. Front tibiae with a bristle behind; hind femora without the long fine posteroventral hairs of the male, but a few shorter very fine hairs can usually be traced about the base, which are absent in *litorea*.

Length 5-6 mm.

This species appears to be more widespread than *litorea*. Mr. Verrall caught it at Tongue (Sutherland) in June on the same day as he took *litorea*, and Col. Yerbury found it at Aviemore (Inverness) and Mr. A. E. J. Carter at Blairgowrie (Perth) in June. It has also occurred at Martham and South Walsham (Norfolk) in June and July, and at Ringwood and other localities in the New Forest (Hants) also in June and July. A specimen was taken by the late Mr. A. Piffard on the canal-bank at Boxmoor (Herts) in August 1898. It stood in Kowarz's Collection under the name *compuncta* Wied.

- 5 (2) Frons at narrowest part usually but little wider than third antennal joint is deep, never more than twice as wide.
 6 (7) Arista subplumose. Wings very nigrescent
 *denigrata* Mg. (v. species 10).

This species, though usually having four pairs of postsutural dorsocentral bristles, may occasionally possess only three pairs; it is therefore included here. A closely allied species, *dispar* Flin., should be found in Britain. It is easily distinguished from *denigrata* by the presence of a distinct posteroventral bristle on middle tibiae, and the absence of posteroventral long bristles to hind femora.

- 7 (6) Arista microscopically pubescent. Wings not conspicuously nigrescent.
 8 (9) Middle tibiae usually with a distinct bristle in front at middle. Front tibiae with a bristle behind at about middle. Hind tibiae with two

* Species marked with an asterisk are additions to Verrall's "List of British Diptera."

almost equally long and strong preapical bristles. Abdominal dark patches small, first segment extensively greyish at sides

.... 3. *contractifrons* Zett.

♂. Frons at narrowest part rather wider than third antennal joint, sometimes half as wide again. Thorax dull brownish-black, but appearing more greyish when viewed from behind, and then with darker stripes in front and a black patch above each wing-base: humeri and notopleural stripe as usual grey. Third (lower) sternopleural bristle not placed as usual almost immediately beneath the hind upper one, but opposite a point nearer midway between the two upper ones. Abdomen very little flattened dorsoventrally, being as deep at the end as at the base, grey with comparatively small triangular dark patches, first segment extensively greyish at the sides, patches on the second and on the third segment usually separated by a dorsal grey line almost as wide as one of the patches, but there is sometimes a darkened central stripe down this grey line on second segment; fourth segment with a darkened central area. Front tibiae with a bristle behind at middle; middle tibiae with one anterodorsal and two posterodorsal bristles; hind tibiae with 1-2 anteroventral bristles towards tip, two anterodorsal and 1-2 smaller posterodorsal bristles. Hind femora with 6-7 long anteroventral bristles on apical half (the bristly hairs on the basal half being comparatively short), and with a posteroventral row of long bristles and bristly hairs, those towards the base and tip being shorter and finer, but two or three about the middle of femur long and bristly.

♀. Interfrontalia extending but little more than half-way down frons. Thorax greyish with three more or less distinct brown stripes, and brownish about the middle of disc to a variable extent. Abdomen grey with rather conspicuous brownish patches on at least the 2nd or 3rd segments, visible from all points of view: ovipositor with distinct terminal hairy lamellae. Legs stouter and tarsi distinctly shorter and stouter than in *litorea* or *sarda*, the bristles as in the male but stronger; hind femora with 4-5 long hairs posteroventrally on basal half.

Length about 5 mm.

This species appears to occur fairly freely in Scotland in June, Mr. Verrall having taken it in the isle of Arran and at Tongue (Sutherland), Col. Yerbury at Loch Assynt (Sutherland), and Mr. A. E. J. Carter at Comrie (Perth). Col. Yerbury also caught specimens on the hills round Llanganmarch Wells (Brecknock) at an elevation of about 1250 feet in August 1913. Male specimens may occasionally be found with four pairs of postsutural dorsocentral bristles, but these are not difficult to distinguish from *curata* by the differently shaped abdomen and smaller dark patches thereon, as well as by other characters mentioned under *curata*. Specimens without the bristle in front of middle tibiae may be distinguished from *baltica* by the other characters in the Table.

- 9 (8) Middle tibiae without a bristle in front and front tibiae without a bristle behind. Hind tibiae with much shorter (and in male

apparently only one) preapical bristles. Abdominal dark patches larger, first segment much more extensively darkened

.... *4. *baltica* Ringdahl.

fumipennis Stein *nec* Zett.

♂. Resembling *contractifrons*, but eyes more narrowly separated on frons; occiput less strongly bristled on middle part and less puffed out below. Sternopleural bristles placed as usual 1:2. Abdomen with larger dark markings and more flattened dorso-ventrally towards tip; median dividing line between each patch narrower in proportion to width of patch. Hind femora with 3-4 anteroventral bristles towards tip and conspicuously long-haired about the base both antero- and posteroventrally. Wings smoky, cross-veins rather closer together.

♀. Interfrontalia reaching almost to front of frons. Thorax greyer, with a distinct narrow central brown stripe and a more suffused and abbreviated side stripe each side. Abdomen with conspicuous brown patches. Legs bristled as in the male, but hind femora about base with only a few much shorter hairs posteroventrally.

Length about 4.5 mm.

This species is now recorded as British from only one pair taken by Col. Yerbury at Brodie (Elgin), the male on June 5th, 1905, and the female on July 12th, 1904. He also took what appears to be a female of this species, though the interfrontalia is not so produced and the abdominal dark patches not quite so distinct, at Studland (Dorset) on July 29th, 1909. According to Ringdahl (Ent. Tidskr. 1918, p. 165), this species is the *L. fumipennis* of Stein but not of Zetterstedt.

- 10 (1) Normally four pairs of postsutural dorsocentral bristles.
- 11 (34) Frons narrow, never at narrowest part three times as wide as third antennal joint, usually much narrower.
- 12 (13) Middle tibiae with a distinct posteroventral bristle below middle

.... *5. *brunneisquama* Zett.

armipes Stein.

♂. Frons at narrowest part only slightly wider than 3rd antennal joint, and about as wide as facial orbits. Jowls about $\frac{1}{2}$ the vertical diameter of eye. Third antennal joint short, hardly twice as long as second joint; arista distinctly thickened at base and microscopically pubescent. Thorax black, but varying much in colour according to the point of view and incidence of the light. Humeri, notopleural depression, and extreme front of thorax rather greyish, the latter, however, showing a narrow black central stripe. Sternopleural bristles 1:1. Abdomen rather broad, ovate, and dorsoventrally flattened. First segment almost entirely black, second with a pair of large trapezoid dark patches, third segment with much smaller more triangular patches, and fourth segment somewhat darkened about middle. Front tibiae occasionally with a fine bristle behind at middle; middle tibiae with, in addition to the distinctive bristle beneath, usually 1-2 anterodorsal and 2 posterodorsal bristles; hind

tibiae usually with about 3 anteroventral, 3-4 stronger anterodorsal, and 2-3 much shorter posteroventral bristles. Hind femora with 3-4 anteroventral bristles towards tip, otherwise quite short-haired beneath. Wings distinctly darkened, especially about base. Squamae very noticeably yellowish. Halteres yellow.

♀. Much greyer than the male, but the bristle beneath middle tibiae is equally distinctive of the species. Interfrontalia produced almost to front of frons. Thorax rather olive-grey, with a distinct narrow central brown stripe and faint indications of side-stripes. Abdomen olive-grey, with a pair of brown patches on the second and third segments only, those on the third segment much smaller and more rounded. Occasionally there is a very narrow central brown line between the spots, which is still more often present on the fourth segment. Chaetotaxy of legs as in the male, but the bristles stronger. Wings not so darkened, yellowish about the base.

Length 5-7 mm.

This species varies somewhat in the chaetotaxy of the legs; in some male specimens there are no anterodorsal bristles to middle tibiae, and very rarely no bristle beneath those tibiae; in the latter case the dark yellow squamae, the absence of long posteroventral hairs to hind femora, and the darkened wings help to distinguish it. The species stood in the Verrall Collection under the name *compuncta* Wied., the true *compuncta* being labelled with the MS. name of *compunctoides*.

It is apparently not uncommon in Scotland, specimens having been found in the Isle of Arran and at Tongue, Rannoch, and Braemar (taken by Mr. Verrall), and at Golspie and Loch Assynt (by Col. Yerbury in June and July; and at Kirkmichael (Perth) by Mr. A. E. J. Carter in August. It has also occurred at Rydal (Westmorland) and the Doone Valley (Devon).

13 (12) Middle tibiae without a bristle beneath.

14 (33) Acrostichal bristles fine and multiserial.

15 (24) Middle tibiae with a distinct bristle in front near or below the middle,

All the British species under this section have long posteroventral bristly hairs about the base of hind femora.

16 (23) Halteres yellow; arista only pubescent.

17 (18) Large strongly bristled species. Hind femora with the anteroventral row of bristles continuous to base. . . 6. *compuncta* Wied.

♂. Frons rather wide, being at narrowest part about $2\frac{1}{2}$ times as wide as third antennal joint. Eyes practically bare. Arista microscopically pubescent. Thorax very much as in *brunneisquama*, central dark stripe in front rather broader, apparently composed of three narrow confluent stripes. Scutellum with a greyish patch at tip. Sternopleural bristles 1:2. Abdomen very much as in *brunneisquama*, but less flattened dorsoventrally and with the side-margins of segments when viewed from behind broadly and conspicuously darkened. Legs strongly bristled; front tibiae with a conspicuous bristle behind; middle tibiae with 2-3 anterodorsal and 2-3 posterior bristles, but none beneath; hind tibiae with 2

small anteroventral bristles towards tip, about 5 anterodorsal bristles, beginning with a short one near base and gradually becoming longer, and 3-4 shorter finer posterodorsal bristles. Hind femora with a complete row of anteroventral bristles, and with long bristly hairs posteroventrally on basal half or more. Wings brownish, especially about base. Squamae and halteres yellow.

♀. Interfrontalia produced almost to front of frons, but narrower than in *brunneisquama*. Thorax somewhat variable in colour from grey to yellowish-grey and in markings, but with a broad central stripe bordered right in front by two narrow darker stripes. Sternopleural bristles 1 : 2. Abdomen as in *brunneisquama*, but with more conspicuous brownish patches at sides of segments as well as on disc. Leg bristles as in the male, including those below hind femora, but these latter shorter than in the male.

Length 8-8.5 mm.

This species is uncommon. Mr. Verrall caught a pair in the Isle of Arran on June 12th, 1882, and a female at Aberlady (Haddington) on June 30th, 1870; Col. Yerbury found a female at the same locality on July 5th, 1899; and Mr. A. E. J. Carter has taken it in Perthshire.

18 (17) Hind femora with anteroventral bristles only on apical half.

19 (20) Larger species with wider frons and deeper jowls, the latter quite one-third the vertical diameter of eye and blackish in most lights

.... *7. *insularis*, sp. n.

♂. Somewhat resembling *compuncta*, but rather smaller. Frons as in that species rather wide. Arista slightly more pubescent. Jowls deeper and blacker. Thorax darker, but sharply greyish about humeri and notopleural depression. Scutellum all dark. The lower posterior sternopleural bristle not strong. Abdomen rather narrower, with wider and usually less separated dark patches on 2nd and 3rd segments, and with a pair of small patches on 4th segment. Front tibiae sometimes with a bristle behind; middle tibiae with 1-2 anterodorsal and 2 posterodorsal bristles; hind tibiae with 3-4 fairly strong anteroventral bristles, 1-2 anterodorsal on middle third, and usually only 1 small posterodorsal bristle. Middle femora with finer posteroventral bristles; hind femora with anteroventral bristles on apical half only, and a row of much shorter (but longer than in *brunneisquama*) posteroventral bristly hairs on basal half. Wings rather yellowish-brown. Squamae pale yellowish. Halteres yellow.

♀. Interfrontalia not quite extended to front of frons and not so narrow as in *compuncta*, slightly glistening in some lights. Jowls greyer than in male. Thorax uniformly brownish on disc, the colour, however, may break up into stripes towards scutellum. Scutellum greyish on disc. Abdomen as in *compuncta*, but no brownish patches at sides unless indistinctly on fourth segment. Chaetotaxy of legs as in the male, but hind femora posteroventrally with only 4-5 short fine bristly hairs near the base.

Length 5.5-7 mm.

This species occurred fairly freely to Mr. Verrall in the Isle of

Arran in June 1882, and Col. Yerbury took it at Nairn in July 1904. It occurs also in the Farøe Islands, from which locality I have received a specimen through the courtesy of Mr. Ringdahl under the MS. name of *faroënsis*.

20 (19) Smaller species with narrow frons and narrower, greyer jowls.

21 (22) Thorax greyish-black with darker stripes. Eyes distinctly separated on frons by a space at least as wide as 3rd antennal joint. Legs longer and more slender..... *8. *curata*, sp. n.

♂. Frons at narrowest part slightly wider than 3rd antennal joint. Jowls about $\frac{1}{4}$ the vertical diameter of eye and silvery-greyish. Arista distinctly pubescent. Thorax greyer than in the last species and more resembling that of *contractifrons*, to which the species bears a considerable general resemblance. Abdomen, however, more ovate and flattened dorsoventrally, with larger dark patches, and the first segment more extensively darkened. Sternopleural bristles 1:2. Front tibiae usually with a fine bristle behind; middle tibiae with a small anterodorsal bristle (sometimes missing) and two small posterodorsal bristles; hind tibiae with 2-3 small anteroventral and two posterodorsal bristles. Hind femora with about 4 anteroventral bristles towards tip and a posteroventral row of about 5 bristly hairs on basal half, gradually increasing in length from base, but not much longer than femur is deep. Wings usually only slightly infuscated about base. Squamae whitish. Halteres yellow.

♀. Interfrontalia brownish, not quite extended to front of frons, but longer than in *contractifrons*. Arista more distinctly pubescent than in that species. Thorax grey, but extensively suffused with brown on disc and with a tendency to form three brown stripes. Lower posterior sternopleural bristle small but distinct. Abdomen with brownish patches larger than usual, somewhat triangular in outline, first segment also considerably darkened. Ovipositor with no distinct terminal lamellae. Chaetotaxy of legs as in male but bristles stronger, the anterodorsal bristle to middle tibiae apparently always present. Posteroventral bristly hairs about base of hind femora much less conspicuous than in *contractifrons* or the previous species.

Length 4.5-5 mm.

This species was found by Mr. Verrall in the Isle of Arran in June and at Inchnadamph and Inveran (Sutherland) in July. Col. Yerbury caught a female at Aviemore (Inverness) on July 28th, 1899, and Mr. A. E. J. Carter took it at Aberfoyle (Perth) in July 1903. Mr. H. W. Andrews has taken it in Ireland at Kenmare and Loo Bridge (Co. Kerry) in July. It is the *contractifrons* of Verrall's "List," the true *contractifrons* standing in the Verrall Collection under the MS. name of *cilifemur*.

22 (21) Thorax blackish without distinct stripes. Eyes closely approximated on frons—only narrowly separated by the silvery orbits, frontal stripe hardly visible. Legs shorter and stouter

.... *9. *mundula*, sp. n.

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A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

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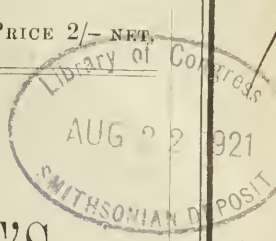
PRICE, 9d. NET. Prepaid Subscription, 8/6 per annum.

The Annual Subscription for 1921 is 15/-.

Third Series. No. 80.]
[No. 687.]

AUGUST, 1921

[PRICE 2/- NET]



THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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VOLUME LVII.

[THIRD SERIES—VOL. VII.]

—♦—
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The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40 Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

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Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.—This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

♂. Head viewed from above, with the antennal prominence but little projecting and the eyes large, very narrowly separated on frons by the narrow silvery orbits, and an almost linear frontal stripe. Arista microscopically pubescent. Thorax black, slightly greyish right in front and distinctly so about humeri and notopleural depression; a central dark stripe may usually be traced right in front. Abdomen short ovate, ground-colour light grey when viewed right from behind, first segment very extensively darkened, second segment with trapezoid dark patches longer than wide, third and fourth segments with successive narrower patches. Legs shorter and rather stouter than usual. Front tibiae with no bristle behind; middle tibiae with one anterodorsal and 1-2 posterodorsal bristles; hind tibiae with 2 small anteroventral bristles towards tip, 2 anterodorsal, and 2 smaller posterodorsal bristles. Hind femora with 4-5 anteroventral bristles on apical half and 5-6 finer long posteroventral bristles on basal half. Wings conspicuously darkened, especially about base. Squamae white with yellowish margins. Halteres yellow. Length about 4 mm.

♀. Unknown.

Described from five specimens captured as follows:—Isle of Arran, June 10th, 1882; Loch Maree (Ross and Cromarty), June 11th, 1884; Aviemore (Inverness), May 25th, 26th, and June 2nd, 1913. The first two specimens were the representatives in the Verrall Collection of *L. trianguligera* of the "List." Meade's *trianguligera* had only three pairs of postsutural dorsocentral bristles, so cannot have been the species described above, and though the true *trianguligera* Zett. has four pairs of such bristles, it differs in having a wider frons and no posteroventral bristles to hind femora. *L. mundula* must be very near to the true *L. septennotata* Zett., but this latter, according to Ringdahl, has no posteroventral bristles to hind femora.

28 (16) Halteres dusky; arista subplumose . . 10. *denigrata* Mg.

A very black species, standing in the British List as *Spilogaster nigrinervis* Ztt.

♂. Frons at narrowest part rather wider than 3rd antennal joint. Face and jowls appearing black or brownish-black in most lights. Arista subplumose. Thorax black, though, as is so often the case in the genus, appearing brownish-black when viewed from in front with the light also from the front. Abdomen appearing black from most points of view, but showing in some lights an inconspicuous narrow greyish central stripe and greyish side-margins, but when viewed right from behind the usual subquadrate black patches, very variable in outline, may be traced on all segments. Front tibiae with or without a bristle behind; middle tibiae with one anterodorsal bristle (sometimes missing) and two posterodorsal bristles; hind tibiae with 2-3 small anteroventral, 1-2 stronger anterodorsal, and often one small posterodorsal, bristles. Hind femora with a complete anteroventral row of long bristles becoming somewhat finer towards base, and 5-6 very long bristly hairs posteroventrally on basal half. Wings very strongly darkened. Squamae whitish. Halteres dusky.

♀. Frontalia of almost equal width throughout, interfrontalia continued almost to front of frons. Orbits, face, and jaws greyer than in male. Thorax very dark grey, with a brownish tinge in some lights, and a black patch over the base of each wing; humeri and notopleural depression light grey. Abdomen dusted dark greyish, without any indications of dark patches. Bristling of legs as in the male, but apparently 1-2 bristles always present behind front tibiae, and the anterodorsal bristle always present and distinct on middle tibiae. Hind femora with a complete anteroventral row of bristles, but only 2-3 long fine bristly hairs posteroventrally about the base. Wings not conspicuously darkened. Squamae whitish. Halteres deep yellow.

Length about 5.5 mm.

This species has been found in widely separated localities. Loch Maree (Ross and Cromarty) and the Isle of Arran, in Scotland. Rydal (Westmorland), Barmouth (Merioneth), nr. Tarrington (Hereford), and nr. Dunsford (Devon), occurring in June and July. It may vary in the number of postsutural dorsocentral bristles, and to a certain extent in the chaetotaxy of the legs, but is always easily recognised by its very black colour, subplumose arista, and darkened halteres in the male. *L. dispar* Fl., a species very much like it, ought to be found in Britain, and may be known by the presence of a distinct bristle beneath middle tibiae, and the absence of a posteroventral row of long bristly hairs on hind femora, while the anteroventral row of bristles on hind femora is not continued back to the base.

24 (15) Middle tibiae with no distinct bristle in front.

25 (26) Arista subplumose. Large very dark species

.... *denigrata* Mg. (v. above).

26 (25) Arista at most pubescent.

27 (23) Hind femora with a posteroventral row of bristles or bristly hairs, which are at least as long as femur is deep

.... *curata*, sp. n. (v. above).

28 (27) Hind femora quite short-haired posteroventrally.

29 (30) Thorax, viewed from behind, with a distinct yellowish-grey or even light greyish patch in front of scutellum

.... *11. *vana* Zett.

nupta Zett.

♂. Eyes very narrowly separated on frons, the narrow orbits touching, the frontalia at its narrowest part practically linear. Arista very distinctly pubescent. Thorax black, with a brownish sheen in some lights and rather more shining than usual, humeri and notopleural depression grey; the patch in front of scutellum varying from brownish to grey, according to the point of view; tip of scutellum also somewhat brownish-grey. Abdomen, viewed from behind, grey or yellowish-grey; first segment very extensively darkened, second segment with a pair of trapezoid dark patches not broader than long, third segment with similar but narrower patches, fourth segment somewhat darkened about middle. Legs usually with a fine bristle

behind front tibiae; middle tibiae with 2 posterodorsal bristles; hind tibiae with 1-2 anteroventral, 2 anterodorsal, and 1 much shorter and inconspicuous posterodorsal, bristles. Hind femora with 3-4 anteroventral bristles towards tip, but short-haired posteroventrally. Wings faintly brownish. Squamae whitish-yellow. Halteres yellow.

♀. Interfrontalia very distinct and reaching to front of frons. Facial orbits at narrowest part hardly as wide as third antennal joint. Arista very distinctly pubescent. Thorax grey, with three narrow brownish stripes, the outer ones down the line of dorso-central bristles. Abdomen grey, with a pair of small triangular brown spots on the 2nd and 3rd segments, those on third segment very little smaller. Legs stouter than in male and with stronger bristles. Wings clearer.

Length about 4.5 mm. ♂; 5 mm., ♀!

This species is probably not uncommon in Britain. Specimens have been examined from the following localities:—Doone Valley (Devon), Crymlyn Bog (Glamorgan), New Forest (Hants), Sherwood Forest (Notts), Rannoch (Perth), and the Isle of Arran; captured by Mr. Verrall, Mr. C. G. Lamb, Dr. Sharp, Col. Yerbury, and Prof. J. W. Carr in June and July. It would appear that Zetterstedt's earlier name of *vana* must be used for this species.

30 (29) Thorax without a lighter patch in front of scutellum.

31 (32) Abdomen, viewed from behind, with the dark patches on the second segment distinctly separated by a greyish central stripe

.... *12. *marina*, sp. n.

♂. Eyes distinctly but sparsely hairy, the hairs longer above but becoming very short below. Frons at narrowest part rather wider than third antennal joint, the frontalia much wider than the narrow, rather dusky orbits. Face very wide, facial orbits about as wide as third antennal joint; jowls $\frac{1}{4}$ the vertical diameter of eye. Arista distinctly pubescent. Thorax dull blackish, without stripes, humer very indistinctly greyish. Abdomen, viewed from behind, with the first segment very extensively darkened; second segment with a pair of broad subquadrate black patches; third segment with much narrower patches, but, like those on second segment, occupying the full length of segment; fourth segment with a slight darkening about the central line. Front tibiae sometimes with a small bristle behind; middle tibiae with posterodorsal bristles; hind tibiae with 2 anteroventral bristles just below middle, and one anterodorsal bristle at about middle. Hind femora with 4-5 anteroventral bristles on apical half. Wings distinctly infuscated, especially about base. Squamae rather yellowish, especially towards margins. Halteres dusky.

♀. Eyes practically bare. Interfrontalia produced to front of frons, and slightly glistening in some lights but not shining as in *aërea*. Frontal orbits brownish-grey. Thorax rather dark brownish-grey; the brownish colour may break up into wide stripes (especially behind) leaving the rest of thorax greyer, but with indications right

in front of two (or even three) very narrow darker stripes between the rows of dorsocentral bristles. Sternopleural bristles 1:1. Abdomen somewhat similar in colour to thorax and with only faint indications of brownish patches on second and third segments, much smaller than in male; ovipositor without distinct hairy terminal lamellae. Chaetotaxy of legs as in male, but middle femora much shorter-haired below. Wings clearer. Squamae paler. Halteres yellow.

Length about 5 mm.

This species is not uncommon round the British coast. Mr. Verrall found it at Aberlady (Haddington) in June and July, and at Fawley (Hants) in June. Col. Yerbury's captures were at Aldeburgh (Suffolk) in September, Walton-on-Naze (Essex) in July and August, Dartford and Gravesend (Kent) in June and July, Studland (Dorset) in September, and Pyle (Glamorgan) in August. Col. C. G. Nurse found it fairly commonly at Walton-on Naze in September and October, 1919, and Mr. H. W. Andrews has taken it in the Thames marshes (Kent) and at Milford Haven (Pembroke).

L. depressiuscula, which somewhat resembles this species, has in the male distinct posteroventral bristles to hind femora, and in the female 2-3 distinct fine hairs in the same situation, two bristles in front of middle tibiae, and three anteroventral and three anterodorsal bristles to hind tibiae. The ovipositor also has distinct hairy terminal lamellae.

- 32 (31) Abdomen, viewed from behind, with patches on second segment practically confluent #13. *aërea* Flin.

♂. Very much like the previous species but always smaller. Eyes only microscopically pubescent. Frons rather narrower, the frontalia at narrowest part very little wider than the orbits. Abdomen darker, the greyish part more brownish-grey, the dark patches wider and less sharply differentiated; no dividing stripe between the patches on second segment when viewed from behind, though a very narrow glistening line may be traced in some lights. Chaetotaxy of legs very similar, but the bristles of row beneath middle femora are stronger, and the other hairs near by shorter. The infuscation of wings and squamae varies according to the maturity of the specimen. Halteres though sometimes deep yellow, apparently never dusky.

♀. Easily distinguishing from any other British species by the broad, brightly shining interfrontalia. Thorax brownish-grey, without stripes. Abdominal patches practically indistinguishable.

Length 4-4½ mm.

This species is undoubtedly distinct from *marina* though it frequents similar situations. Mr. Verrall found it fairly common in the Isle of Arran in June and at Aberlady (Haddington) in June and July. It has also occurred in the valley of the River Deben and at Butley (Suffolk) in June, and Col. Yerbury has taken it at Barmouth and Llanbedr (Merioneth) and Studland (Dorset) in June and July, and Mr. H. W. Andrews at Milford Haven (Pembroke) in July and at Kenmare (Co. Kerry) in Ireland.

- 33 (14) Acrostichal bristles strong and biserial, with the rows close together
 *14. *biseriata* Stein.

♂. Frons wide, at narrowest part $2-2\frac{1}{2}$ times as wide as third antennal joint. Frontal orbits fairly wide and very silvery viewed from above, the frontalia also glossed with silver when viewed from in front. Third antennal joint about half as long again as second; arista only microscopically pubescent. Thorax brownish-grey on disc, but lighter grey almost all round margin, including a broad grey patch in front of scutellum; scutellum grey except at base and sides. Abdomen, viewed from behind, with all except the hind margin of first segment darkened: 2nd and 3rd segments each with two small, widely separated, somewhat triangular dark patches (smaller on the third segment); fourth segment with two very small faint spots near hind margin. Front tibiae with or without a small bristle behind; middle tibiae with 1-2 small bristles behind; hind tibiae with two small anteroventral and two rather larger anterodorsal bristles, also 1-2 small posterodorsal bristles may usually be traced mixed with the short hairs. Hind femora with only 2-3 anteroventral bristles towards tip, and 2-3 rather conspicuous long posteroventral bristles near base. Wings very faintly greyish. Squamae whitish yellow. Halteres yellow.

♀. Interfrontalia grey, considerably extended but not to front of frons, frontal orbits wide and greyish. Thorax slightly darker grey without conspicuous stripes, though sometimes brownish about middle of each row of dorsocentral bristles. Abdomen same colour as thorax, with a pair of small but conspicuous rounded brown spots on 2nd and 3rd segments, and much fainter smaller spots on first segment. Ovipositor with hairy lamellae and not armed with spines. Legs as in male, including 2-3 rather conspicuous posteroventral bristles or bristly hairs near base of hind femora.

Length 3.5-5 mm.

This species occurs on the sea-coast, and has been taken at Gravesend (Kent), Frinton-on-Sea (Essex), and Aldeburgh (Suffolk) by Col. Yerbury, Col. Nurse, and Mr. C. G. Lamb in June, July, and September; while I found it comparatively common on Blankeney Point (Norfolk) in August 1920.

- 34 (11) Frons wide, three times (or more) wider than third antennal joint.
 35 (36) Thorax and scutellum entirely dove-grey. Interfrontalia hardly produced beyond ocellar triangle .. 15. *solitaria*, n. n.

solitaria auct. nec Zett.

♂. Frons about $3\frac{1}{2}$ times as wide as third antennal joint (about $\frac{2}{3}$ the width of head). Frontalia at narrowest part rather more than twice as wide as a frontal orbit. Jowls below eyes not quite so wide as frons. Thorax very light grey and unicolorous when viewed from in front, more slaty-grey when viewed from behind. Scutellum of same colour as thorax. Abdomen not flattened, in profile almost equally deep at base and tip; first segment not conspicuously darkened; 2nd and 3rd segments each with a pair of triangular dark patches very little different in size; 4th segment with indications of much smaller dark patches. Hind femora with 3-4 long

anteroventral bristles towards tip, but short-haired posteroventrally. Front tibiae usually without a bristle behind; hind tibiae with about 2-3 small anteroventral bristles, 2 rather stronger anterodorsal, and sometimes 1 small posterodorsal, bristles. Squamae whitish. Halteres yellow.

♀. Usually larger and distinctly darker than the male and with thorax distinctly striped. Interfrontalia continued about half-way down frons. Thorax grey with distinct brown stripes (a narrow central, with a broad side stripe each side); the stripes may coalesce immediately in front of suture and a side stripe may indistinctly split up into two, especially behind the suture. Scutellum grey. Abdomen with very distinct (and constant in all lights) brown patches, small on first segment, very large and extending broadly on hind margins of second and third segments. Ovipositor ending in hairy papillae, without spines. Chaetotaxy of legs as in male.

Length 4-5 mm. (nearly 6 mm. in some females).

This species is fairly common in the north in June and July, Specimens having been examined from Loch Assynt (Sutherland); the Isle of Arran; Nethybridge, Aviemore, and Glenmore (Inverness); Rannoch and Aberfoyle (Perth); Beattock (Dumfries); Rydal (Westmorland); taken by Mr. Verrall, Col. Yerbury, Mr. C. G. Lamb, and Mr. A. E. J. Carter. Col. Yerbury also caught a specimen on Mynydd Epynt (Brecknock) at about 1200 feet elevation on August 7th, 1913, and Mr. H. W. Andrews caught it at Glengariff (Co. Cork) in August 1908 and May 1911. Dr. Meade recorded it from Windermere.

It has previously been known under the name *solitaria* Zett., but Zetterstedt's species is not a *Limnophora* but one of the Coenosinae, and apparently identical with *Pseudocoenosia longicauda* Zett. In Kertész's Catalogue *L. sert* Pand. is quoted as a synonym, but Pandelle described this species as having "Protergum: bande médiane glabre, sauf deux paires de macrochètes fines peu élevées" "Antennes . . . style nu" "meditergum obscurci entre les lignes latérales de macrochètes" "♀: rase entièrement d'un gris clair" besides other small points in the venation, which do not agree with the species described above, but answer better to a description of *veterrima* Zett. I therefore cannot accept the name *serta* Pand. for this species.

- 36 (35) Thorax broadly darkened between the rows of dorsocentral bristles, at least behind the suture. Scutellum dark. Interfrontalia produced almost to front of frons *16. *veterrima* Zett.
signata Stein.

♂. Frons about as wide as in *solitaria*, but differing in having a long pointed silvery-grey interfrontalia, and with the bristles along orbits shorter and stouter. Frontalia also conspicuously silvery in some lights. Thorax, viewed from in front, grey, with a narrow dark central stripe in front and broadly darkened (up to the lines of dorsocentral bristles) behind the suture. Viewed from behind it appears much more extensively darkened, including dark patches above the base of each wing separated from the broad dark middle

band by a dark grey stripe. Acrostichals biserial in front of suture, but quadriserial and widely spaced behind suture. Scutellum darkened. Abdomen more flattened about base than in *solitaria*; first segment very extensively darkened, second segment with very large triangular dark patches only narrowly separated on the median line and here occupying the whole length of segment; third segment with very much smaller, well separated, triangular dark patches on hind margin. Chaetotaxy of legs as in *solitaria*, but the short pubescence on tibiae (especially hind tibiae) is rather longer and the bristles on hind tibiae finer. Squamae whitish. Halteres yellow.

♀. Very different from the male, the thorax and abdomen being grey with light yellowish-brown tinge and immaculate. Frons with the interfrontalia very broad and long, occupying the greater part of frontalia. Frontal bristles few in number and short, outside the bristles a few fine tiny hairs. The thorax may show indications of two narrow stripes in front between the acrostichals and dorso-centrals, and the abdomen may bear traces of small faint brownish spots on the first three segments. Ovipositor with a terminal armature of stout upcurved spines. Chaetotaxy of legs as in the male. Wings with a faint yellowish tinge.

Length 4-5 mm.

This species has been found in recent years at widely separated places round our sea-coast in every month from May to September. Specimens have been examined from Brodie (Elgin), and Nairn, in Scotland; Southwold and Aldeburgh (Suffolk) and Studland (Dorset) in England; and Pyle and Porthcawl (Glamorgan) in Wales; taken by myself, Col. Yerbury, and Mr. Claude Morley. The synonymy is that given by Ringdahl (Ent. Tidskr., 1918, p. 159) after an examination of Zetterstedt's types. I also consider it probable that *serta* Pand. is another synonym.

(To be continued.)

EREMIPHILA FRASERI, SP. N., A NEW MANTID FROM MESOPOTAMIA.

BY B. P. UVAROV, F.E.S.

♀. Of moderate size for the genus. Head scarcely broader than the pronotum at its fore margin; face smooth; its subantennal part almost flat; with a feeble transverse convexity just below the antennae; supra-antennal transverse impression shallow; ocelli scarcely prominent; vertex and occiput smooth, but uneven; lateral sulci very shallow and narrow in the vertex, more impressed in the occiput; a pair of low, but rather large, rounded tubercles between the sulci and the eyes, just behind the inner emargination of the latter. Pronotum not larger than the breadth of its fore margin, distinctly narrowed posteriorly; its surface very uneven, but not rugose, with very small scattered granules; median line scarcely perceptible in the prozona, but distinctly raised in the metazona; transverse sulcus rather deeply impressed, its lateral portions almost reaching the fore margin of the pronotum and connected with each other by a submarginal sulcus, so that the part of the pronotal disc before the

typical sulcus is completely encircled by the sulci: this encircled part is strongly convex, with two low rounded tubercles in its fore part and a shallow impression behind the middle; metazona rather irregularly uneven, with two strongly prominent, closely approximated, round tubercles near the hind margin; the sides of pronotum in the hind part almost vertical, impressed near the hind angles; metazona almost twice as long as prozona; fore margin of pronotum distinctly convex, with a feeble prominence (but not a tooth) in the middle, very feebly bisinuate; lateral margins feebly and irregularly sinuate, entire; hind margin strongly rounded sideways and almost straight in the middle portion, with a small median projection; the fore lateral angles distinctly obtuse, rounded; hind angles still more obtuse, but not rounded, unarmed. Elytra and wings perfectly lateral. Fore coxae thick, smooth, with a few granules on the inside and 4-5 feeble spinules along the lower carina. Fore tibiae with 4 external spines, besides the apical one. Middle and hind femora and tibiae with irregularly scattered granules and spinules. Abdomen, strongly flattened and expanded, uneven, but not rugose.

General coloration greyish-ochraceous. Face whitish. Vertex and occiput with scattered brownish points, indefinitely marmorated with grey, with a narrow pale middle line. Pronotum of the general coloration, with scattered brownish granules and dots; two bigger, somewhat impressed brownish dots just behind the typical sulcus; hind angles brownish; hind tubercles somewhat greenish. Mesonotum and metanotum greenish-ochraceous with brown dots and spots; elytra, except their basal half which is ochraceous, greenish ochraceous, with brown dots. Abdomen ochraceous, dotted with brownish. Fore legs pale ochraceous; tarsi brownish. Middle and hind legs ochraceous, with dark brown fasciae and granules on the upper side.

Length of body 21; width of head 6.5; length of pronotum 5.5; width of pronotum anteriorly 6; width of pronotum posteriorly 5; length of fore femora 6; length of middle femora 9.5; length of middle tibiae 8.5; length of hind femora 12.5; length of hind tibiae 14.5; length of hind tarsi 7.5; maximal width of abdomen 8 mm.

The type of this species, which is contained in the British Museum, is unique; it was captured by Major A. D. Fraser, D.S.O., R.A.M.C., at Anah, river Euphrates, Mesopotamia, 15.vii.1920, and it bears collector's note: "Lived ten days in captivity, with nothing to eat or drink. A few seen in desert; run very fast."

There are only seven described subapterous members of this genus, these possessing just unseparated expansions of the mesonotum and metanotum, and not a single one of them is known from Asia. The nearest ally of the present species is *E. barbara* Bris., from the Algerian Sahara, which differs from it by the shape and sculpture of the head and pronotum. *Eremiaphila* is confined to the Eremian region; *E. turcica* Westw., said to be from "Turkey," is also a Mesopotamian insect, since Westwood's type in the British Museum is from Baghdad.

London,

July 18th. 1921.

SOME INDIAN COLEOPTERA (6).

BY G. C. CHAMPION, F.Z.S.

The fifth contribution of this series (concluded on p. 146) was devoted to a study of various Malachiids, 25 species in all. The sixth gives additional information about various representatives of five genera previously noticed, *Ochthebius*, *Dianous*, *Malthinus*, *Xylophilus*, and *Pentaria*, and includes descriptions of fifteen new species, distributed amongst the Families Hydrophilidae, Staphylinidae, Psephenidae, Dascillidae, and Mordellidae.

The species described are as follows, the genera marked with an asterisk being additions to the Indian fauna:—

| HYDROPHILIDAE. | | <i>Dianous obliquenotatus</i> , n. sp. |
|--|----|--|
| <i>Ochthebius strigosus</i> , n. sp. | .. | <i>gracilipes</i> , n. sp. |
| .. <i>jagthanae</i> , n. sp. | .. | <i>bifoveifrons</i> , n. sp. |
| STAPHYLINIDAE. | | .. <i>subtortuosus</i> , n. sp. |
| <i>Myrmedonia (Zyras) perforata</i> , n. sp. | | PSEPHENIDAE. |
| .. (") <i>pindarae</i> , n. sp. | | * <i>Psephenus tenuipes</i> , n. sp. |
| <i>Orphnebius flaviventris</i> , n. sp. | | DASCILLIDAE. |
| <i>Cryptobium ocyroides</i> , n. sp. | | * <i>Eubria semistriata</i> , n. sp. |
| .. <i>kumaonense</i> , n. sp. | | MORDELLIDAE. |
| .. <i>fluvialile</i> , n. sp. | | <i>Pentaria lateicollis</i> , n. sp. |

OCHTHEBIUS Leach.

Since the publication of my notes on the eight species of this genus captured by my son in the Himalaya (Ent. Mo. Mag. lvi. pp. 165-169, July and August 1920), two others have come to hand from him, as well as long series of *O. nitidipennis*, *opacipennis*, and *scintillans*, etc.

Ochthebius strigosus. n. sp.

Oblong-oval, moderately shining; brassy or brassy-cupreous above, the palpi and tarsi in part, and the under surface, black, the femora and tibiae testaceous. Head densely, rugulose punctate, with two foveae between the eyes and a central one at the base, the labrum feebly notched in the centre. Prothorax strongly constricted behind, the hind angles rectangular; densely, rugulose punctate, the disc with six foveae, the two along the median line placed in the central sulcus, and three other depressions on each side near the outer margin. Elytra moderately long, rounded at the sides; rather coarsely punctate-striate, the interstices closely, transversely rugose. Ventral surface opaque, the last two abdominal segments shining.

Length $1\frac{1}{2}$ – $1\frac{2}{3}$ mm.

Hab. Ranikhet, Kumaon (H. G. C.).

Two specimens. Near *O. sexfoveatus*, and separable therefrom by the feebly notched labrum and the transversely rugose elytral interstices,

the uneven surface giving them a glittering appearance. In one example the elytra are cupreous. The sexfoveate disc of the prothorax, etc., distinguish *O. strigosus* from *O. scintillans*.

Ochthebius jagthanae, n. sp.

Oblong-oval, rather narrow, convex, opaque, the elytra slightly shining; black, the prothorax reddish at the sides, the legs fusco-testaceous. Head roughly punctate, bifoveate between the eyes, the labrum entire. Prothorax short, broad, abruptly narrowed and constricted behind; densely, roughly punctate, with six narrow foveae on the disc, the two along the median line placed in the central sulcus, and two other depressions on each side near the outer margin. Elytra oval, crenate-striate, the interstices narrow, rugose. Ventral surface opaque, the last two abdominal segments shining, the metasternum without polished median space. Legs short, rather stout.

Length 1 mm.

Hab. Jagthana in Kumaon (*H. G. C.*).

One specimen, detected amongst a mass of unmounted *Dianous*, etc., forwarded in spirit. Much smaller and narrower than *O. kosiensis*, the labrum unemarginate, the metasternum without polished median area. This is the smallest *Ochthebius* yet seen by me from India.

MYRMEDONIA Er.

Myrmedonia (Zyras) perforata, n. sp.

Robust, shining, black, the antennal joints 1, 2, and 11, the palpi, a transverse humeral patch on each elytron, the abdomen (a black space across the segments 4 and 5 excepted), and legs ferruginous or testaceous: the head, prothorax, elytra, and sides of the abdomen sparsely clothed with long, blackish bristly hairs, which arise from rather coarse punctures, the dorsal abdominal segments also with a row of punctures in the transverse basal groove and the sixth with some others at the tip. Head much narrower than the prothorax, subparallel-sided behind the eyes; antennae moderately long, stout, joints 4-10 gradually decreasing in length, 9 and 10 transverse, 11 nearly as long as the two latter united. Prothorax strongly transverse, slightly sinuate at the sides before the base, and with a large, rounded, deep fovea in the centre behind. Elytra broad, about as long as the prothorax.

Var.? Head and prothorax more coarsely and a little more closely punctate; the testaceous humeral patches on the elytra confluent and extending downward to the inner apical angle (leaving a triangular black patch at the sides behind), the subapical black bands on the abdomen confined to the exposed dorsal segments 3 and 4, and the ventral segment 4.

Length $6\frac{1}{2}$ - $7\frac{1}{2}$, breadth $1\frac{3}{4}$ -2 mm.

Hab. Swal River Basin [type: ii.1919], W. Almora, and Nainital [var.], all in Kumaon (*H. G. C.*).

Three specimens, their sex not ascertained, the one from Nainital,

treated as a variety, smaller than the others, and with the testaceous colour on the elytra more extended, leaving a triangular black patch on the outer apical portion of each of them. A close ally of the European *M. haworthi* Steph., the antennae black, except at the base and tip, the head and prothorax more sparsely punctured, the basal fovea on the latter large and deep, the elytra very much smoother and differently coloured.

Myrmedonia (Zyras) pindarae, n. sp.

Robust, very shining, deep black, the terminal joint of the antennae rufo-piceous, the fourth joint of the maxillary palpi and the tibiae and tarsi obscure testaceous; the head, prothorax, elytra, and sides of the abdomen with scattered dark hairs. Head much narrower than the prothorax, sparsely punctured at the sides; antennae moderately long, stout, rapidly thickened from joint 4 onwards, 3 much longer than 2, 4-10 gradually decreasing in length, 4-6 about as long as broad, 7-10 transverse, 11 nearly as long as 9 and 10 united. Prothorax transverse, rounded at the sides anteriorly; very sparsely, irregularly, somewhat finely punctured (except along a smooth median space which is bordered by an irregular row of punctures on each side), and with a deep transverse fovea in the centre behind. Elytra broad, much wider than and about as long as the prothorax; sparsely, rather coarsely punctured, each puncture bearing an adpressed fuscous hair. Abdomen narrowing posteriorly, almost impunctate, except along the margins, the terminal dorsal segment with several setigerous punctures at the tip.

Length $6\frac{1}{2}$ mm.

Hab. Pindar Valley, alt. between 8000-11,000 ft., in Kumaon (*H. G. C.*: vii.1920).

One specimen, sex not ascertained. Separable from *M. perforata* by its wholly black body, the stouter antennae, the more finely punctured prothorax, the somewhat closely punctured elytra, the smoother abdomen, the black femora and base of the antennae, etc. The 4-jointed anterior tarsi separate *M. pindarae* from the genus *Aleochara*.

ORPHNEBIUS Motsch.

Orphnebius flaviventris, n. sp.

♂. Rather broad, very shining, deep black, the abdomen and tarsi testaceous, the tibiae brown; the head, prothorax, elytra, and sides of the abdomen clothed with widely scattered, long, erect, blackish, bristly hairs arising from fine punctures (each abdominal segment bearing about three bristles on its outer edge), the rest of the surface impunctate. Antennae not very stout, long, more than half the length of the body, joints 4-10 much longer than broad, 3 longer than 4, 11 elongate, equalling 8-10 united. Head and prothorax strongly transverse, the head narrower, and the elytra a little longer and much wider than, the prothorax. Abdomen with the upturned lateral margins very broad, parallel as seen from above, the penultimate dorsal segment (fifth exposed) strongly transverse, trapeziform, truncate at the apex, almost smooth, except

for a faint longitudinal strigosity at the apex: seventh ventral segment with a matted tuft of blackish hairs on each side. Legs long and slender.

Length $3\frac{1}{2}$, breadth $1\frac{1}{3}$ mm.

Hab. W. Almora in Kumaon, alt. 5500 ft. (*H. G. C.*: viii.1917).

Described from a single example in perfect condition. Larger and broader than *O. hauseri* Epp. (1895), and similarly coloured, except that the antennae are wholly black; differing from that insect in having these organs long and comparatively slender, with a very elongate apical joint, the penultimate dorsal abdominal segment almost smooth (conspicuously strigose and sparsely, finely punctured in *O. hauseri*), the seventh ventral segment tufted on each side, etc. These two species are highly polished and deep black, with the abdomen and tarsi testaceous or rufo-testaceous. Specimens of *O. hauseri* were also captured by my son, at Sunderdhunga, alt. 7000–11,000 ft., in the same province, in June 1919; they were found under stones, always in company with *Myrmica smythiesi* Forel, the ant having been seen to carry the beetle about on several occasions; the type of this beetle was found at Simla, and in the British Museum there is an example of it from the Kanyra Valley. Two other species of the genus have recently been described by Cameron, both from Kandy, Ceylon: see *Ent. Mo. Mag.* lvi, pp. 96, 97 (April–May 1920).

CRYPTOBIUM Mann.

Cryptobium ocyroides. n. sp.

♂. Robust, rather broad, shining; finely pubescent, and also set with scattered, erect, black, bristly hairs; black, the mouth-parts (the piceous mandibles excepted), palpi, and antennae obscurely rufescent, the legs fusco-testaceous, the tibiae and tarsi piceous; the tibiae hairy and setose; head, prothorax (the smooth median line excepted), and elytra densely, rather coarsely, rugosely punctured, the punctures on the anterior portion of the head longitudinally confluent, the scutellum smooth, the abdomen densely, finely punctate. Head broader than, and about as long as, the prothorax, somewhat oval, widest a little before the base, the eyes moderately large; mandibles long, strongly tridentate within, blunt at the tip; antennae slender, long. Prothorax a little longer than broad, sinuously narrowed posteriorly. Elytra shorter than the prothorax, obliquely truncate at the apex, carinate above the lower margin. Sixth visible ventral segment (seventh of Fauvel) very deeply, narrowly, triangularly emarginate.

Length 16 mm.

Hab. River Sarda Gorge in Kumaon, alt. 1500 ft. (*H. G. C.*: xii.1918).

One male. This species is much larger than any of the described Indian *Cryptobia*, *C. elephas* Fauv. (1904), from the Nilgiri Hills, for

example, measuring 9 mm. only, the present insect having the general facies of an *Ocypus*. The mandibles are tridentate within, instead of bidentate as the two following species.

Cryptobium kumaonense, n. sp.

Shining, the head subopaque; rufo-piceous, the elytra usually darker, its apical margin rather broadly and indeterminately, and the antennae, palpi, and legs, testaceous, the humeri rufescent; closely, finely pubescent, and also set with scattered erect setae. Head elongate, longer and much broader than the prothorax, parallel-sided for some distance behind the eyes and arcuately rounded thence to the base, densely, very finely, rugulose punctate, the eyes prominent; mandibles very long, sharply bidentate within, pointed at the tip; antennae long and slender, joints 3-10 gradually decreasing in length. Prothorax narrow, much longer than broad, subcylindrical, rounded at the sides anteriorly; closely, rather finely punctate, except along the narrow smooth central line, the punctures mostly separate one from another. Elytra very long, longer and wider than the head, oblongo-quadrate; densely, finely, confluent punctate, the sculpture coarser than on the head. Abdomen densely, minutely punctate. Sixth ventral segment of ♂ deeply, triangularly emarginate.

Length 6-7 mm.

Hab. W. Almora in Kumaon (*H. G. C.*: xii.1917).

Thirteen specimens. Separable from the variable *C. abdominale* Motsch., an insect occurring rarely at the same locality and more freely in Bengal (*F. W. C.*), by its parallel-sided, opaque, densely rugulose head, the prominent eyes, the long, slender antennae, the much narrower, more finely punctured prothorax, and the relatively longer, less coarsely sculptured elytra, which is bordered with testaceous at the apex, as in *C. marginatum* Motsch.

Cryptobium fluvatile, n. sp.

Shining, sparsely pubescent and also set with scattered erect bristly hairs; black, the mouth-parts, palpi, mandibles, and legs testaceous, the apex of the elytra indeterminately rufescent; head, prothorax (except along the smooth median line), and elytra coarsely, densely, rugosely punctate, the punctures on the head subconfluent longitudinally, the abdomen closely, finely punctured. Head long, narrow in ♀, broader in ♂, parallel-sided behind the eyes and abruptly rounded at the sides posteriorly, the eyes prominent; mandibles long, sharply bidentate within, pointed at the tip; antennae moderately long. Prothorax convex, about as long as the head, and not or very little wider than it in ♀. Elytra much wider than, and as long as, the prothorax, subquadrate.

♂. Fifth ventral segment with a very large rounded fovea in the middle, the sixth deeply triangularly emarginate.

Length 7-8 mm.

Hab. W. Almora in Kumaon (*H. G. C.*).

One male and seven females, the male having a very large rounded fovea on the fifth ventral segment and the head broader than in the female. Distinguishable from the other Indian forms with mandibles bidentate within by the densely, coarsely, rugosely punctured head, prothorax and elytra, and the relatively narrow head. *C. rosti* Schub., kindly determined for me by Dr. Cameron, the commonest species of the genus in Almora, a larger insect, has a broad, posteriorly-widened coarsely, sparsely punctured head, a sparsely punctured prothorax, with smooth median space, the mandibles tridentate within, etc. *C. fluviale* is more nearly related to *C. marginatum* Motsch. (= *limbatum* Kr.) and *C. abdominale* Motsch., and is separable therefrom by the coarser sculpture of the upper surface. Another allied insect, with a sharply defined testaceous apical margin to the elytra and the mandibles tridentate within, has been sent from Almora; but as a single example only has been found, it must remain undetermined for the present.

DIANOUS Samouelle.

Since the publication of my papers on the Indian species of this genus (Ent. Mo. Mag. lv, pp. 41-55, 97-101, 1919), some hundreds of additional specimens have come to hand from my son H. G. C., and a certain number have been found in an extensive unmounted collection of Sikkim beetles received by the British Museum from Mr. H. Stevens. Four novelties have been discovered, including two remarkably distinct forms, which are described below. The additional localities, etc., for certain other species require mention:—

D. annandalei Bernh.—About 100 examples from Ranikhet, Jagthana, Khaula, Sunderdhunga, and W. Almora, and one from Gopaldhara (*Stevens*), are now before me, these showing considerable variation in the sculpture of the prothorax. The sole difference, therefore, between this insect and *D. versicolor* Cam. (two specimens only of which are known, including the type) is the simple fourth tarsal joint. *D. annandalei* is one of eight species found at Jagthana.

D. inaequalis Champ.—Found subsequently at Chakrata, Ranikhet, and Jagthana, a long series in all.

D. scabricollis Champ.—Subsequently found in profusion in Jagthana, W. Almora.

D. cyanogaster Champ.—Also sent in profusion from Almora. It has been taken in the Rungbong Valley, Sikkim, by Mr. Stevens.

D. lobigerus Champ.—Found in great abundance by my son at Tanakpur, and sparingly in the Rungbong Valley by Mr. Stevens.

D. cameroni Champ.—A few more specimens have come to hand from Jagthana, etc. Three from Sikkim are nigro-cyaneous in colour.

D. subvorticatus Champ.—Subsequently captured in profusion in Almora.

One additional Indian species has been described in the meantime by Cameron, *D. championi* from Lebong, Bengal (Ent. Mo. Mag. lvi, p. 145). The Chinese *D. pilosus* Champ. (1919) = *D. banghaasi* Bernhauer (1916), whose paper was not received in London till 1920.

Dianous obliquenotatus, n. sp.

Very elongate, robust, bluish-green or obscure cyaneous, the elytra brassy on the disc and each with an oblique, rather large, orange streak just behind the middle, the antennae, palpi, and legs black, the prothorax and the polished portions of the under surface glabrous, the rest of the surface very finely cinereo-pubescent; the head, elytra, and abdomen densely, very minutely punctate; the prothorax shining, very sparsely, the depressed basal area somewhat coarsely, punctured. Head large, rounded at the sides behind the eyes; antennae moderately elongate. Prothorax convex, narrow, slightly longer than broad; with a very deep oblique furrow on each side behind the middle, the two furrows coalescent on the disc and bounded posteriorly by a tumid space, the depressed transverse space at the base sometimes with a smooth raised median line. Elytra long, broad, longitudinally depressed within the humeri and along the suture anteriorly (the intervening space appearing raised) and obliquely grooved behind the orange streak, the latter tumid and smoother than the rest of the surface. Metasternum and the ventral segments 1-4 with a rather broad polished space down the middle. Legs rather stout, moderately elongate. Fourth tarsal joint simple.

Length $8\frac{1}{2}$ – $9\frac{1}{2}$ mm. (♀.)

Hab. Rungbong, Gopaldhara, Sikkim (*H. Stevens*, in *Mus. Brit.*).

Five specimens. A large, robust form, with an oblique, tumid, orange streak on each elytron; the elytra variegate, uneven, and sculptured as in *D. annandalei*, *versicolor*, and *inaequalis*. Compared with *D. gracilipes*, the legs are shorter and stouter, the antennae are not nearly so elongate, the polished area on the under surface of the body is less extended, and the fourth tarsal joint is quite simple.

Dianous gracilipes, n. sp.

Very elongate, obscure aeneous or greenish aeneous, the antennae, palpi, and legs black, the prothorax and the polished portions of the under surface almost glabrous, the rest of the surface very finely sericeo-pubescent; the head and elytra very densely, minutely, the abdomen a little more distinctly, punctate, the prothorax shining and almost smooth, the basal portion only with a few scattered punctures. Head very large, obliquely narrowed posteriorly, broadly bisulcate between the eyes, the latter large; antennae extremely elongate. Prothorax convex, narrow, slightly longer than broad, much narrowed

anteriorly; angularly excavate and compressed on each side behind the middle, and also obliquely grooved laterally and bi-impressed in the centre before the base. Elytra long, broad, uneven, depressed along the suture and within the humeri anteriorly, and also on the disc beyond the middle. Abdomen gradually narrowing from the base, the last two dorsal segments much smoother than those preceding, the anal brushes long. Metasternum and ventral segments with a sharply-defined broad polished space down the middle, the rest of the under surface densely punctulate. Legs extremely elongate, slender: fourth tarsal joint narrowly cleft and penicillate.

♂. Sixth ventral segment triangularly emarginate, the seventh longitudinally impressed in the middle. Genital armature: lateral lobes very long and slender, scarcely thickened at the tip, the latter set with several long projecting hairs: median lobe gradually narrowed to the pointed apex.

Length $8\frac{1}{2}$ –10 mm. (♂ ♀.)

Hab. Ranikhet Division of Almora (H. G. C.).

Twenty-two examples seen. Separable from *D. annandalei* (subsequently sent in large numbers from W. Almora by my son) and *D. versicolor* by its much larger size, the very long and slender antennae and legs, and the almost smooth, laterally excavate, less nodose prothorax.

(To be continued.)

The Haliplidae as vegetarians.—It may be of interest if I briefly recapitulate my observations on the feeding-habits of certain species of the British Haliplidae. At Hartlebury, Worcestershire, last April, I confined three species in small tumblers containing *Spirogyra* and a little *Ulothrix*. All aquatic creatures likely to prove of value to the species as food had previously been removed by careful washing. In each case the specimens fed quite happily on the algae, and were not observed seeking for animal food. When I was satisfied as to this point, and the beetles had been thus confined for thirteen days, I took one *Haliphus* out of each tumbler, and having killed it (by chloroform), I squeezed out the contents of the stomach and alimentary canal, and examined them under the low power of the microscope. In all three samples a greenish-looking substance analogous to chlorophyll was seen. These and the following considerations seem to show that the Haliplidae are at any rate partially vegetarians. Furthermore to confirm these experimental results, I was able in Hartlebury Castle Park to examine the sides of a small fountain which were covered with a luxuriant growth of *Spirogyra*, with a little *Ulothrix*. Here the Haliplidae (*H. wehnckeii*, *H. lineatocollis*, *Cnemidotus impressus*) could be seen feeding on these algae under natural conditions, though there were present large numbers of aquatic larvae, etc., which one would expect to be the natural food of the Haliplids. During the last month I have also noticed that when collecting in the River Yeo, Sherborne, Dorset, masses of *Elodea* and *Callitriche* have only yielded a small supply of Haliplidae (chiefly *Brychius*), the algae, however, producing myriads of *H. lineatocollis* and *wehnckeii*. Whether some of the other larger species have modified their diet remains to be seen.—E. J. PEARCE, The Lodge, Corpus Christi College, Cambridge: July 5th, 1921.

A note on Agabus melanarius Aubé.—Mr. Bedwell, in noticing the localities for this species (*antea*, p. 13), has overlooked a record (Ent. Mo. Mag. xxxi, p. 100) of the capture of one specimen by Mr. M. L. Thompson at Arncliffe Woods, near Whitby, the identification of which was confirmed by Dr. Sharp.—T. HUDSON BEARE, 10 Regent Terrace, Edinburgh: July 1921.

A note on Limnebius aluta Bedel.—In view of the note by Mr. Champion (*antea*, p. 38) I carefully examined my series of so-called *picinus* Marsh., and found none with an apically bordered elytral suture. My specimens were all taken at Stalham, Norfolk. It is desirable to point out that Marsham himself, in his description of *picinus*, which is very short and consists of five words only, does not say a word about the elytral suture, but probably Mr. Champion's suggestion, in view of the absence of any type, is a wise one—that is, to ignore *picinus* altogether.—T. H. BEARE.

Philonthus corvinus Er., etc., at Aberlady.—On April 30th, a brilliantly hot sunny day, I paid a visit to Gullane to work the sand-hills. I found practically all the species which occurred on the same day in 1920, but much less commonly. The only addition was *Tachyporus solutus*, in moss on an old stone wall, a species I have never found before in Scotland. After leaving the sand-hills I crossed Aberlady links, and, by working the thick moss round a weed-choked pond, found a number of interesting species, including *Philonthus corvinus* Er., *P. micans* Grav., *Gymnusa variegata* Kies., *G. brevicollis* Payk., *Myllaena dubia* Grav., *Cerycon minutus* Muls., and *Ptenidium fuscicorne* Er. Encouraged by the result of this work, I paid two other visits on May 7th and 14th—each visit, owing to the failure of the train service due to the coal strike, involving a walk of nine or ten miles—to secure more of *P. corvinus*, and in this I was successful; in addition to the above species, I found *Chaetarthria seminulum* Herbst in profusion and *Myllaena infuscula* Matth. I indicated this locality to my friend Mr. W. Evans, and he visited it about a fortnight later, but the disastrous drought had played havoc with the moss. He only found one, *P. corvinus*, but in lieu of this species turned up a fair number of *P. vernalis* Grav. in the piles of moss I had pulled up, and in the few pieces of damp moss he could still find.—T. H. BEARE.

Gryllus domesticus outside houses.—Referring to Mr. B. P. Uvarov's interesting paper on *Gryllus domesticus* in the June number of this journal, pp. 138-140, it may be worth while recording that near Kirkheaton, a village some three miles from Huddersfield, there is an extensive refuse-dump—or, as it is termed here, a "tip,"—which for years was, and I suppose still is, "alive" with crickets. The "tip" has been formed by the refuse from the railway, and for many years has been on fire in several parts, and I am told that repeated attempts to extinguish the fires have been unavailing. The consequence is that the heat is probably very similar to that of a kitchen hearth, and the crickets revel in it. On warm still evenings their chirping can be heard for a considerable distance. There are no houses in the immediate vicinity, so probably the insects were introduced along with the railway refuse when it was thrown out.—GEO. T. PORRITT, Elm Lea, Dalton, Huddersfield: July 7th, 1921.

Gronotoma nigricornis Kieffer (Cynipoidea), a British insect.—Mr. J. E. Collin has sent me three examples (all ♂) of a Cynipoidean parasite which he has obtained from pupae of the Muscid *Agromyza aeneiventris* Fallen, taken from stems of *Senecio* growing at Blakeney Point, Norfolk; also a pupa-case containing a fourth specimen which has since completed its metamorphosis and proves to be a ♀. The first three specimens emerged at the end of May, and were alive when they reached me on May 30th; the fourth emerged about a week later. These parasites belong to Förster's genus *Gronotoma*—subfamily Eucolinae (Cynipoidea)—which may be known by the absence of a fringe of hairs at the base of the abdomen, by the parapsidal furrows, which are distinct, converging, and meeting at the junction of the mesoscutum with the scutellum, and by the radial cell being closed at the anterior margin of the forewing. Kieffer describes four species indigenous to Europe, and the examples before me come nearest to the description of his *nigricornis* (♂) recorded from Hungary by Szepligeti, in which the mesopleura are entirely smooth, but traversed by a straight furrow, the legs for the most part red or yellow, and the antennae black. In the type the third joint of the antennae (♂) is strongly curved and is nearly twice as long as the fourth, but in Mr. Collin's specimens it is more than twice as long; the former is stated to be only one millimetre long, while the latter are twice that size. These facts, without actual comparison with Kieffer's type, are insufficient to assume the discovery of a new species, for size in parasitic insects is extremely variable. The female is not described by Kieffer and is apparently unknown. It is very similar to the male, except that the antennae, which are more slender, are not so long, and have the third joint simple, not curved, and the same length as the fourth joint. The insect is new to Britain, and the discovery of its economy alone makes it worth recording.—L. A. BOX, Shere, near Guildford: June 16th, 1921.

Resting attitude of Nomada bifida.—In May 1920, I found two *Nomada bifida* Thoms. resting in an unusual attitude, both being suspended by the front tarsi within a foot of each other, one from a twig, the other from a dead bramble leaf.—J. W. SAUNT, 53 Enfield Road, Stoke, Coventry: July 11th, 1921.

Ovipositing of Pachyrrhina crocata L.—A few days ago I had the pleasure of witnessing this Tipulid fly in the act of depositing ova. With the abdomen at right angles beneath the thorax it kept rising about six inches, then, apparently, with all its force centred in the downward movement, it struck the ground with its ovipositor; if it happened to strike a lump of earth, it immediately repeated the movement until the ovipositor slipped into a crevice; it then remained stationary for a few seconds while it appeared to deposit ova. This took place eight or nine times in the space of about two minutes, when the insect, becoming alarmed at my presence, flew away. The noticeable feature of the whole operation was the speed and deliberation of all the movements. Fortunately the conspicuous abdominal bands of this handsome insect rendered observation comparatively easy at a distance of two feet.—J. W. SAUNT.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
April 14th, 1921.—Mr. K. G. BLAIR, B.Sc., F.E.S., President, in the Chair.

Miss L. S. Cheeseman read a short paper on "The Parasite of *Sirex gigas*: *Rhyssa persuasoria*" (Hymenopt.), and illustrated it with lantern-slides. Mr. Edwards exhibited the parasite from both Britain and the Continent. Mr. H. Main, larvæ of *Geotrupes* sp. (Coleopt.) and described their movements and economy. Mr. Newman reported *Triphena pronuba* at sallow March 9th, *Callophrys rubi* on April 10th, and the early abundance of *Euchloe cardamines*. Mr. Blair, living larvæ of *Photuris pennsylvanica*, a fire-fly of the Eastern United States. Mr. Main, for Mr. Enifer, larvæ of the red mite *Trombidium*, common in gardens, and remarked on its polyphagous habits. Mr. Bunnett, *Callidium variabile* (Coleopt.) bred from an oak plank.

April 28th, 1921.—The President in the Chair.

Mr. H. H. L. Dalton, of Reading, was elected a member.

The Rev. J. Waterston, B.D., B.Sc., gave an address on "The Natural History of Macedonia," illustrated with lantern-slides and a large number of insects other than Lepidoptera captured by himself. Mr. K. G. Blair, additional slides by Dr. Forbes, and colour sketches of the scenery by Major Cottam. Mr. Blair exhibited a collection of Lepidoptera sent by Mr. G. B. Pearson from California, and also living examples of the Coccid *Phenacoccus aceris* on Spanish Chestnut and Beech at Oxshott.

May 12th.—Mr. STANLEY EDWARDS, F.L.S., F.Z.S., Vice-President, in the Chair.

Mr. L. N. Stoniland, of Muswell Hill, was elected a member.

Exhibition of "Other Orders."—Prof. T. D. A. Cockerell exhibited numerous fossil insects from Mid-Tertiary strata of the Isle of Wight, with drawings of new species. Mr. Lyle, a skein of silk wound from two cocoons of *Meteorus albiditarsis*, a hymenopterous parasite of *Bupalus piniaria*. Mr. Step, nests of *Sceliphron* sp., the Mid-Winter Wasp, from Calcutta. Mr. S. R. Ashby, the collection of British Earwigs, Cockroaches, Grasshoppers, Locusts, and Crickets formed by the late Curator, Mr. W. West. Mr. Withycombe, *Scorpio europæus*, the young stage of *Mantis religiosa*, etc., received from Mr. Hugh Main from the South of France, and also *Sinodendron cylindricum* (Coleopt.) from a decaying beech in Epping Forest. Mr. H. Moore, an exotic Homopteron, *Ptyelus flavescens*, from Nairobi, and also a specimen of *Gongylus gongyloides* from Ceylon. Mr. O. R. Goodman, *Timarcha laevigata* (Coleopt.), abundant at Horsley on May 8th. Mr. B. S. Williams, *Orchestes salicis* (Coleopt.), from willow at Finchley. Mr. Coxhead, sketches of galls and their makers. Mr. Turner, specimens of one of the largest dragonflies, *Mecistogaster caeruleata*, from Central America. Mr. Edwards, a collection of Central European Hymenoptera and Diptera.

May 26th.—Mr. STANLEY EDWARDS, F.E.S., Vice-President, in the Chair.

Mr. G. T. Lyle, F.E.S., of Wallington, was elected a member.

Mr. Farmer exhibited a partly xanthic *Rumicia phlaeas* and a similarly coloured *Callophrys rubi*, both from Riddlesdown. Mr. Enifer, specimens of a field-cricket, sent to him from South France by Mr. H. Main, and the red ova of a *Trombidium* from garden earth. Mr. Neave, pupae of *Strymon pruni* from N. Huntingdon. Mr. Gimms, ova of *Cupido minimus* and the beetle *Cryptocephalus aureolus* from Eastbourne. Mr. Goodman, suffused forms of *Ematurga atomaria* from St. Martha's Hill, Guildford. Mr. Bunnett, the beetle *Hedobia imperialis*, taken at Coulsdon. In remarks on the season it was noted that *Rumicia phlaeas* was very common, *Celastrina argiolus* was very scarce, and that *Eulype hastata* and *Hemaris fuciformis* were out at Horsley.

June 9th.—The President in the Chair.

Mr. A. A. W. Buckstone exhibited series of *Colias croceus (edusa)* with extended black border of fore-wings. Dr. G. S. Robertson, ab. *cacca* of *Aphantopus hyperantus* from the Lakes, forms of *Spilosoma menthastri* with spots tending to run together, bred from Horsley, pale forms of *Tiliacea aurago* from Box Hill, and dark ones from Torquay, and var. *lavaterae* of *Hesperia malvae* from Bude, etc. Mr. K. G. Blair, living specimens of the Phasmid *Bacillus gallicus*, young larvae of *Thais rumina*, *Papilio podalirius*, the asparagus beetle *Crioceris 12-punctata*, the pupae of the glowworm, and the females of *Epichnopteryx* sp., on the life-history of which he communicated notes. Mr. O. R. Goodman, the melanic form of *Heemerophila abruptaria* taken near its original locality in N. London. Mr. F. B. Carr, larvae of *Ptilophora plumigera*. Mr. Enifer, cocoon and pupa of an Ant-Lion from S. France. Mr. Grosvenor, a living specimen of *Trochilium crabroniforme* and a hybrid between *Zygaena trifolii* and *Z. hippocrepidis*.

June 23rd.—The President in the Chair.

Exhibition of Living Objects.—Mr. H. Main, a number of objects obtained recently in S. France, including crickets, centipedes, scorpions, spiders, trap-door spiders, earwigs, harvesting-ants, larvae of an ant-lion, of *Ascalaphus*, of *Palparcus*, etc. Mr. Coxhead, galls in ash-leaves of the Dipteron *Perrisia fraxini*. Mr. Blair, the Phasmid *Carausius morosus* from India, the glowworm *Lampyris lusitanica* from S. France, and the firefly *Photuris pennsylvanica* bred from larvae from U.S.A. Mr. H. Moore, dipterous parasites from a pupa of *Sphinx ligustri*. Mr. Step, several species of Trichoptera. Mr. Enifer, larvae of *Coccinella bipunctata* and of an *Anthrenus* with the grain weevil *Calandra granaria*. Mr. Withycombe, larvae of the scorpion-fly, etc. Mr. Carr, larvae of *Bithys quercus*, *Xanthorhoe montanata*, *Tephrosia consonaria*, etc.—H. J. TURNER, Hon. Editor of Proceedings.

OBSERVATIONS ON BRITISH COCCIDAE, WITH DESCRIPTIONS OF
NEW SPECIES.

BY E. ERNEST GREEN, F.E.S., F.Z.S.

(Concluded from p. 152.)

Pseudococcus comstocki Kuw. (Fig. 5.)

Living colonies of this insect are of frequent occurrence on bananas imported into this country from the West Indies. They are to be found on the stalks and at the base of the fruits.

The species, which has not previously been recognized here, some-

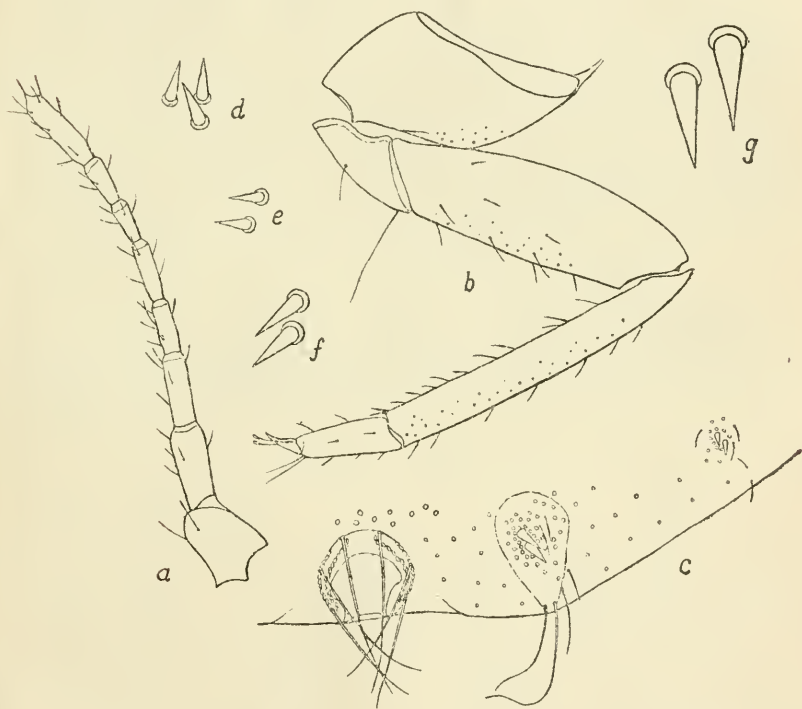


Fig. 5.—*Pseudococcus comstocki*. Adult ♀: a, antenna, $\times 130$; b, hind leg, $\times 130$; c, posterior extremity, $\times 130$; d, spines of 1st ceriferous tract, $\times 450$; e, spines of 15th ditto, $\times 450$; f, spines of 16th ditto, $\times 450$; g, spines of 17th ditto, $\times 450$.

what closely resembles *longispinus* and *maritimus*, both of which are known as greenhouse pests with us.

The adult female is of a dull purplish colour, closely overlaid with white mealy secretion, and with a marginal series of waxy tassels which

gradually increase in length towards the posterior extremity. These tassels are considerably longer than those of *citri* (our common "mealy bug"), but very much shorter than those of *longispinus*. In this respect it differs also from *maritimus*, in which the terminal tassels only are greatly elongated. There are 17 ceriferous tracts on each side of the body, of which the first three or four (occasionally as many as seven, *vide* Ferris) carry 3 or 4 spines apiece (*d*); the remaining tracts with 2 spines only. The spines of the 17th (anal) tract are greatly enlarged (*g*), and those of the 16th tract are slightly enlarged (*f*). The 17th tract is surrounded by a large oval chitinized area, attenuated posteriorly (*e*). The tibia of the hind limb is slender (not dilated as in *maritimus*), and is fully three times the length of the tarsus. There are scattered translucent pores on the outer area of the tarsus, on the inner area of the femur, and a very few on the outer area of the coxa. Such pores are not noticeable on the hind limbs of *longispinus*, but are more crowded on those of *maritimus* (compare figs. 4, *a*, *b* & 5, *b*). The pores on the ceriferous tracts are less crowded than in *longispinus* and *maritimus*. *Ps. longispinus* differs also in having both 16th and 17th tracts surrounded by well-defined and circumscribed chitinous areas.

Pseudococcus paludinus, nov. (Fig. 6, *a-e*.)

Adult female brownish pink, masked (on the dorsum) by a thin covering of white pulverulent secretion. Posterior extremity with a pair of short, stout, waxy tassels, with a smaller tassel on the sides of each of the two preceding

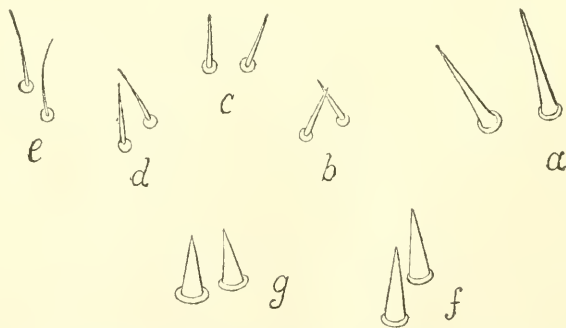


Fig. 6.—*a-e*, cerarial spines of *Pseudococcus paludinus*, $\times 450$; *f*, *g*, cerarial spines of *Pseudococcus hibernicus*, $\times 450$.

segments. Younger examples are of a pale olivaceous colour. Antennae 8-jointed (in one example 7-jointed through a partial fusion of the 7th and 8th); the terminal joint longest, longer than the two preceding joints together; 6th always shortest; 3rd usually equalling, but occasionally shorter than 2nd. Limbs well developed; the tarsus of mid and hind legs less than half the length of the tibiae; tarsal digitules simple, ungual digitules slightly dilated.

Caudal setae slightly longer than those of the anal ring. Ceriferous tracts (cerarii) confined to the margins of the abdominal region, none on frons or thorax; from five to seven pairs of these cerarii can be distinguished. Spines of the anal tract relatively slender, acutely pointed; the preceding two (or three) tracts with smaller and more slender spines; beyond this point the cerarial spines tend to become setiform. The gradual transformation of the cerarial spines is represented in fig. 6, *a-e*. Similar setae, or setiform spines, are scattered over the dorsum; those on the frontal area larger and more crowded. Small trilocular pores numerous, evenly distributed, not concentrated on the cerarii. Some larger circular pores (associated with short but stout ducts) are scattered sparsely over the body.

Length 2.5 to 3 mm.; breadth 1 to 1.25 mm.

Wicken Fen, Sept. 1920. The insects were found on the under surface of the foliage of various plants, including *Eupatorium cannabinum*, *Symphytum officinale*, *Urtica*, *Lysimachia*, *Convolvulus*, and *Spiraea*. Many were wandering freely; others occupied angles between the prominent veins of the leaves, in which position the anterior half of the body was protected by a loose canopy of white secretionary matter. These canopies remain attached to the plant after the insects have vacated them. Specimens kept in captivity forced their way into crevices of the box, in which they constructed dense white ovisacs.

Allied to *hibernicus*, from which it may be distinguished by the number of the cerarii (2 in *hibernicus*, 5 to 7 in *paludinus*), by the form of the cerarial spines, which are very much stouter in *hibernicus* (compare *a* and *b* with *f* and *g*), and by the absence of a circumscribed denser area on the anal cerarii. The tibia of the mid leg of *paludinus* is proportionately much longer, being approximately three times the length of the tarsus.

✓ *Ripersia tomlini* Newst.—An unfortunate mistake occurred in my remarks (Ent. Mo. Mag., lvi, June 1920, p. 122) on this species. I there refer to a reduction in the number of the antennal joints "being brought about by a partial or complete fusion of the 2nd and 3rd joints." This should read "of the 3rd and 4th joints."

Ripersia europaea Newst.—Examples of a *Ripersia*, taken on roots of grasses in nests of *Lasius niger*, at Minehead (Somerset), Sept. 1920, have been determined by Prof. Newstead as *europaea*. Although no record of this species as a British insect has appeared in print, I understand from Prof. Newstead that it has been taken in this country on several occasions by Mr. Tomlin and Mr. Donisthorpe.

Ripersia halophila Hardy.—On roots of *Suaeda fruticosa*, *Statice binervosa*, and *Armeria maritima* (Blakeney Point, Norfolk, 19.vii.1920). The insects were particularly abundant on the roots of *Suaeda*, which, as

is its habit, was growing in saline marshes subject to periodical inundation by the sea. They were revealed by turning over stones embedded in the sand below the plants. The young larvae bear a curious superficial resemblance to insects of the family *Lipuridae*. Newstead makes no mention of any ovisac in connection with this species; but I found the old spent females enveloped in a thick covering of white pulverulent secretion that had apparently served as a receptacle for the ova.

In well-stained preparations there is noticeable a large, sharply-defined, circular opening or pore on the venter, occupying a median position on the 2nd abdominal segment. In some examples it has the appearance of being raised on a conical tubercle; in others, to be sunk in a funnel-shaped pit. Possibly the process may be eversible.

Ripersia scirpi, nov. (Fig. 7.)

Adult female (*a*) elongate, broadly rounded in front and behind, slightly broader across the abdomen. Colour pink, more or less concealed beneath a coating of white mealy secretion. Antenna (*b*) small, 6-jointed, 6th longest, 4th shortest. Limbs relatively small but robust (*e*); tibio-tarsus slightly shorter than the femoral segment: ungual digitules short, slightly expanded at extremity; tarsal digitules slender, simple. Anal ring with six moderately long setae. Caudal setae small and inconspicuous. A very few small setae distributed sparsely over both dorsum and venter, rather more closely on the posterior segment. A broad submarginal zone crowded with relatively large ring-shaped pores (*d*). Small trilocular pores (*c*) distributed evenly but more sparsely over the whole body.

Length 3 to 3.5 mm.; breadth 1 to 1.25 mm.

Concealed at base of stems of *Scirpus caespitosus*, in boggy ground; Camberley, June 1920.

Lichtensia viburni Sign.—When in Cornwall, during the latter half of March and early in April, I found this species commonly on wild ivy growing on walls and roadside banks. Later in April the same species was observed at Lyme Regis (Dorset). The colonies of insects, at this time, consisted of female nymphs and male puparia, from which winged males were then emerging. More than two months later, towards the end of June, fresh material received from Lyme Regis was found to comprise adult females and numerous fully developed male larvae, with a few newly constructed male puparia. It would appear, therefore, that there are two broods of males, emerging in April and July respectively. So far as records are available, *Lichtensia viburni* appears to occur more commonly in the western counties, the most eastern record being from Tring (Herts).

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

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TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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The Annual Subscription for 1921 is 15/-.

Third Series, No. 81.] SEPTEMBER, 1921 [PRICE 2/- NET.
[No. 688.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

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VOLUME LVII.

[THIRD SERIES—VOL. VII.]

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G. C. CHAMPION, Broomhall Road, Horsell, Woking.

Duplicates.—I shall be pleased to distribute specimens of *Nebria livida* L., recently captured by myself at Mundesley, among the subscribers of this Magazine.—LEONARD G. BOX, 90 Marine Parade, Worthing.

Desiderata.—*Tetropium gabrieli*, *T. crawshayi*, *T. pareum*, *Hylotropes bajulus*, *Molorchus umbellatarum*, *Rhagium indagator*, *Pachyta 6-maculata*, *P. collaris*, *Leptura fulva*, *Strangalia aurulenta*, *Acanthocinus aedilis*, *Pogonochaerus bidentatus*, *Lamia textor*, *Saperda scalaris*, *Stenostola ferrea*, *Oberea oculata*.—N. C. ROTHSCHILD, 4 Palace Green, London, W. 8.

FOR SALE.

TROPICAL AFRICAN (UGANDA & KENIA COLONY) BUTTERFLIES & MOTHS, etc., etc., in Great Variety and A 1 Condition (papered).

SPECIAL OFFER:—200 specimens of 50 species at £6 the lot. Cash with order.—R. A. DUMMER, c/o S.A. Museum, Cape Town.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7 (nearest stations: South Kensington and Gloucester Road).—October 5th, 19th, at 8 p.m.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40 Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, 44 Belfast Road, Stamford Hill N. 16.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

CHICHESTER AND WEST SUSSEX NATURAL HISTORY SOCIETY.—This Society has recently been reorganized, and proposes to make Reference Collections and to have Monthly Excursions during the Summer. Will anyone who wishes to join kindly communicate with the

Hon. Sec.: Rev. C. E. TOTTENHAM, Summersdale, Chichester.

Lecanopsis formicarum Newst.—Mr. J. C. Fryer has sent me an adult female of this rare Coccid, with a note that it was collected by "A. Duffield, on grass roots, at Folkestone Warren, S.v.1920." The antennae of this example are 7-jointed, with several of the joints showing signs of fusion. Another specimen, taken by Mr. Fryer on roots of *Elymus arenarius* at Hunstanton (Norfolk) in the month of June,

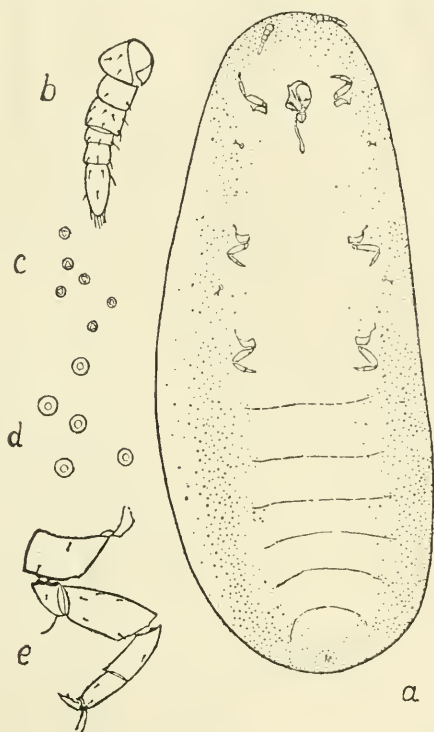


Fig. 7.—*Ripersia scirpi*. Adult ♀: a, ventral aspect, $\times 30$; b, antenna, $\times 135$; c, smaller pores, $\times 450$; d, larger pores, $\times 450$; e, mid leg, $\times 135$.

proves to belong to the same species; and Mr. F. R. Tomlin informs me that he took several examples of the insect at Llangonydd (Glamorgan) during the first week of May.

With regard to this species, I have Prof. Newstead's authority and permission to say that he now regards his *Lecanopsis brevicornis* as a nymphal stage of *formicarum*. His reasons for this decision are stated in the following quotation from a letter dated 24.vii.1919:—

"At Aberhosan (Montgomeryshire) I found examples of *Lecanopsis formicarum*; some in the crowns of *Nardus stricta*, and others deep down in wet

tufts of *Polytrichum* sp., on the top of Foel Fadian, at an altitude of 1600 ft. Some of the examples were enveloped in ovisacs containing rosy-pink eggs. and one female was partly surrounded by a disintegrated mass of glassy plates. The female from the latter, when treated with KOH, had the major portion of the effete skin of the 2nd stage female attached to the anterior part of its body : this, on examination, proved to be specifically identical with the Coccid which I described as *Lecanopsis brevicornis* in 1896. I have now broken up the cyst which I got—with one other—from Suettisham (Norfolk), and upon which I based my description, and find that it contains an adult female of *Lecanopsis formicarum* and the effete skin of the second stage female which is clearly referable to *L. brevicornis*. The latter must therefore sink as a synonym of *formicarum*. But much the more interesting point is that the 2nd stage female becomes encysted (as in *Margarodes*) and that the adult becomes active after escaping from the cyst, and finally constructs an ovisac."

Something still remains to be done to elucidate the development of this species. As noted by me in an earlier article in this Magazine (3rd Ser., vol. i, June 1915, p. 182), I have found *L. brevicornis* in some abundance in the neighbourhood of Camberley, and have noted three distinct stages of the insect. The earliest, which I regarded as advanced larvae, were characterized by slender 6-jointed antennae, a pair of longish caudal setae, and four isolated groups of ceriferous pores on each side. What I took to be the succeeding stage differs from the supposed adult in the possession of well-developed limbs and antennae (the latter with 7 joints) and a single isolated group of pores on each side of the prothoracic segment. The third stage answers accurately to Newstead's description of *brevicornis*, having greatly reduced limbs and antennae, and a continuous series of pores extending along each side of the body.

This question of the identity of *brevicornis* and *formicarum* has led me to review my series of British species of *Lecanopsis*, with the result of a further reduction of our species by the suppression of my *L. butleri*, which I am now convinced is inseparable from *formicarum*. A comparison of my description of *butleri* with Newstead's description of *formicarum* reveals a few apparent discrepancies. I have given 5 to 7 as the number of antennal joints in *butleri*, while Newstead attributes 8 joints to the antennae of *formicarum*. But I have a specimen of *formicarum* (my identification of which has been corroborated by Newstead himself), from Guernsey, in which one antenna has 5 and the other 6 joints only; and there is the aforementioned example from Folkestone, with 7-jointed antennae. The antennae of this species would appear to be undergoing a process of reduction, with a consequent variability in the number of joints. Then, Newstead makes no mention of a conspicuous medio-longitudinal series of large pores on the dorsum, but I find them to be present in my examples from both Guernsey and

Folkestone. My description of the young larva of *butleri* agrees closely with that of the same stage of *formicarum*, as described by Newstead.

This further knowledge enables us to reconstruct the life-history of the insect. Adult females, with ova, are to be found from the end of May till early in July. Young larvae appear in June and July, and maintain a more or less active existence (through more than one stage) until the late autumn, when they assume an encysted stage (hitherto recognized as *L. brevicornis*) and remain enclosed in a thin tale-like shell throughout the winter and early spring. Young adults are apparently in evidence as early as April (*vide* Newstead, Mon. Brit. Cocc. ii, p. 19). Some time in May (*vide* Ent. Mo. Mag. liii, Sept. 1917, p. 209) these young adults ascend the grass stems, presumably for purposes of mating. After fertilization they descend again to the ground, and construct their woolly ovisacs deep in the crowns of grass or in tufts of moss.

The synonymy of the species will now read as follows:—

- Lecanopsis formicarum* Newstead, Ent. Mo. Mag. xxix, Sept. 1898.
 „ *brevicornis* Newstead, Ent. Mo. Mag. xxxii, March 1896.
 „ *butleri* Green, Ent. Mo. Mag. liv, Sept. 1917.

Exaeretopus Newstead.—This genus was erected to contain a Lecaniid species with 2-jointed tarsi on the anterior limbs. Such a structure is so fundamentally different from every other genus in the Family *Coccidae* (which is characterized by the presence of single-jointed tarsi) that it might almost constitute a claim for a subfamily to itself. But, after a careful study of the limbs in the type-species (*formiceticola*), I am inclined to regard the supposed articulation as of the nature of a deep fold rather than as a true joint. This view is confirmed by an examination of the limbs of the following British species which I now refer to this genus.

Exaeretopus longicornis Green. (Fig. 8.)

Lecanopsis longicornis Green, Ent. Mo. Mag. lii, Feb. 1916, p. 26.

Just as Newstead at first overlooked the dimerous character of the anterior limbs of his species, which he originally recorded (Ent. Mo. Mag. 1893, p. 207) as *Spermococcus fallax* of Giard, so I made a similar error in referring my *longicornis* to the genus *Lecanopsis*. Subsequent examination revealed the fact that the anterior limb of *longicornis* is almost identical in form with that shown in Newstead's figure of *Exaeretopus formiceticola*. The similarity was so close that I thought it possible that the two species might be identical; but, Prof. Newstead

having, very generously, presented me with a mounted preparation of his species, I find that they are amply distinct, *formiceticola* being without the conspicuous submarginal series of pores that characterizes *longicornis*.

The tarsi of the anterior limbs, as shown in the accompanying figure, are seen to be more or less completely bisected by a deep fold, starting from the dorsal edge and usually extending to a depth of from half to three-quarters of the limb (*a*, *b*); in extreme cases, however, the fold is continued, very faintly, to the ventral edge of the limb (*c*, *d*); but there is nothing that can be described justly as an articulation. It is noticeable that the division occurs at varying parts of the member; it may be at or near the middle (as in *a* and *b*), nearer the distal extremity

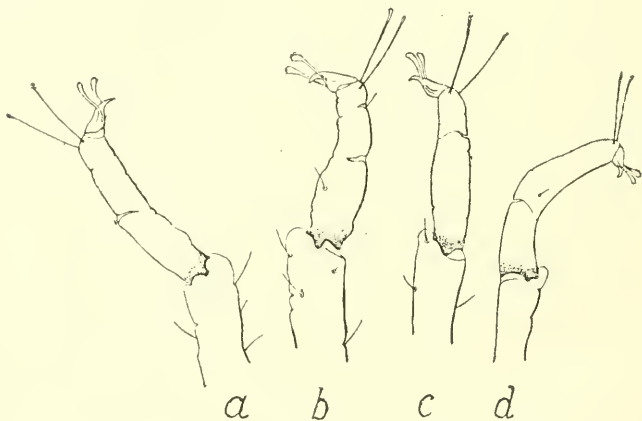


Fig. 8.—*Exaeretopus longicornis*. *a-d*, various forms of anterior tarsi, $\times 220$.

(as in *c*), or nearer the base (as in *d*). Moreover, there are often other incipient folds, marked by small indentations on the edge of the limb, which in some cases (as in *b*) may extend inwards to a depth almost equalling that of the principal fold. Similar incipient folds are to be seen on the tarsi of the other limbs, more especially upon those of the third pair; and, in one example, a nearly complete division—almost comparable with that shown at (*d*)—occurs on one of the tarsi of the hinder limb. In another example I have observed a fold on the hind tarsus exactly comparable with that shown at (*a*). All the tarsi in both *formiceticola* and *longicornis* have an unusually crumpled character, which confirms me in my view that the apparently dimerous condition of the anterior tarsi is merely the result of an exaggerated fold.

The name *longicornis*, appropriate enough so long as the species

remained in the genus *Lecanopsis*, is unfortunately no longer characteristic since its removal to the present genus. But the laws of nomenclature will permit of no change in the original name of the species.

Eriopeltis festucae Fonsc. (Fig. 9.)

If a suitably stained preparation of *Eriopeltis festucae* is examined, it will be found that few of the conical spines project completely beyond the surface of the body. Most of them appear to be sunk in obconical pits, though a few cases will occur in which the whole spine is exposed. It would appear, therefore, that the spines are retractile, their movements being governed by the tension of the body fluids. Figure 9

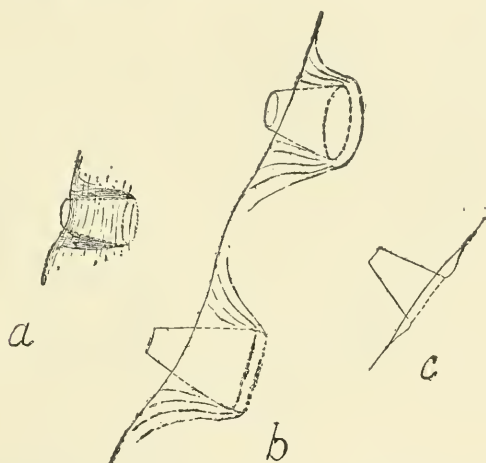


Fig. 9.—*Eriopeltis festucae*. Adult ♀: *a*, spine completely retracted; *b*, spines partially retracted; *c*, spine completely extended: all $\times 450$.

shows, more or less diagrammatically, the position of the spines (*a*) when completely retracted, (*b*) when partially withdrawn, and (*c*) when fully extended.

Luzulaspis luzulae Dufour was found, in September, in unusual abundance in a field which is very closely grazed by the united efforts of cattle, horses, goats, and geese. The snowy-white ovisacs were so crowded upon the leaves of the plant (*Luzula campestris*) that the infested areas could be distinguished from some distance away.

Lecanium capreae L.—Dr. W. J. Fordham has sent me examples of *L. capreae*, taken on *Ribes*, at Edale (Derbyshire). The species does not appear to have been recorded before from this host-plant.

Lecanium pseudhesperidum Ckll.

In my last contribution to this Magazine (June 1920, p. 123) I described, as *Lecanium aequale* of Newstead, a species found on *Laelia-Cattleya elegans* in Mr. W. J. Kaye's orchid-house at Surbiton. I remarked at the time that my specimens did not conform exactly with the type of *aequale*. Since the publication of my article, Mr. Harold Morrison (of the U.S. Bureau of Entomology) has drawn my attention to the probability that my insect is really *Lec. pseudhesperidum*. After examination of typical examples of that species, with which Mr. Morrison kindly supplied me, I am convinced that he is correct in his surmise. *L. pseudhesperidum* differs from *aequale* principally in the following characters: in the greater number of the medio-dorsal pores, and their forward extension almost to the level of the rostrum; in the more strongly developed marginal setae; and in the larger size and more elongate form of the adult insect. *L. aequale* is a very broadly ovate insect, and the dorsal pores are differently arranged, tending to separate into two loose series which seldom extend beyond the abdominal segments.

Mr. Morrison informs me that *Lecanium pseudhesperidum* is a fairly common species on Orchids in the United States.

Pulvinaria vitis L.—Amongst the various recorded host-plants of this species, I have found no mention of the "Mountain Ash" (*Pyrus aucuparia*). Mr. Donisthorpe has sent me branches of this tree, from the neighbourhood of Wellington College, thickly encrusted with the scales and ovisacs of *Pulvinaria vitis*.

Newstead mentions vines and peach-trees—*Crataegus*, *Betula*, *Alnus*, *Salix*, and *Cotoneaster*. Other host-plants that have come under my notice are "Aspen" (*Populus tremula*), "Sloe" (*Prunus spinosa*), and Lime (*Tilia europaea*).

Chionaspis salicis L.—Red-currant twigs, infested with this insect, were submitted to me for identification in April. Newstead notes the occasional occurrence of the species upon *Ribes sanguineum*, but I have failed to find any previous record of its occurrence upon *Ribes rubrum*. It is conceivable that it might become a serious fruit pest if allowed to establish itself upon currant bushes.

Lepidosaphes tuberculatus Malen. (Fig. 10.)

Examples of this species, hitherto recorded from Italy only, have been sent to me by Mr. J. C. F. Fryer. They were collected from leaves of an orchid (*Cymbidium* sp.) at Birkenshaw, Yorkshire, iv.1920. The

species superficially resembles *beckii* (with which I at first confused it), but may be distinguished by the presence of a conspicuous tuberculiform process near the anterior border of the margin of each of the three abdominal segments immediately preceding the pygidium. It differs also in having the median circumgenital pores disposed in a lax group, instead of in a single chain, as in *beckii*. The dorsal pores on the pygidium of *tuberculatus* are greatly reduced in number; the crowded



Fig. 10.—*Lepidosaphes tuberculatus*. Lateral margin of abdomen, $\times 220$.

inner series, which is a conspicuous feature in *beckii*, is represented in *tuberculatus* by three or four isolated pores only.

Malenotti's type material was taken on *Cymbidium trachyanum* at Florence. The species is doubtless of tropical origin.

Lepidosaphes ulmi L. (Fig. 11.)

The discovery of *L. tuberculatus* in this country has attracted my attention to a somewhat similar structure (which appears to have been overlooked) in *L. ulmi*. The processes are smaller than those of *tuberculatus* and of a different form, being more or less acutely pointed; but

they are quite sharply defined, and are more heavily chitinized than are the surrounding tissues. They occupy a position close to the anterior border of each abdominal segment, where they appear to be tucked away in the sutures between the overlapping margins. In this position they are often obscured by the contraction of the segments. They are more conspicuous in some specimens than in others, and are particularly well

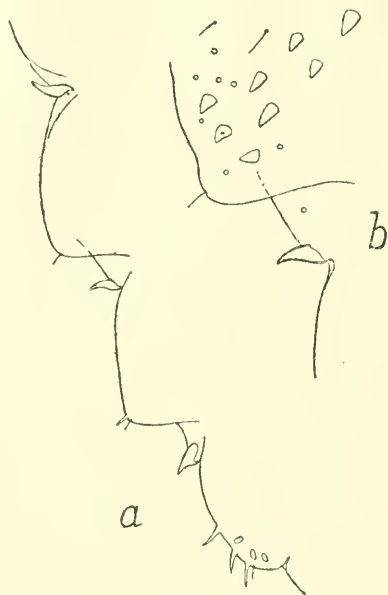


Fig. 11.—*Lepidosaphes ulmi*. Lateral margin of abdomen, showing intersegmental processes: *a*, $\times 220$; *b*, $\times 450$.

developed in some examples from the stem of *Ceanothus veitchii* (Camberley, 23.iii.1921).

Correction.—"Observations on British *Coccidae*," V. (Ent. Mo. Mag., May 1920, p. 116, line 22). For "a new subgenus of the former family," read "a separate section of the former subfamily."

April, 1921.

SOME INDIAN COLEOPTERA (6).

BY G. C. CHAMPION, F.Z.S.

(Concluded from p. 184.)

Dianous bifoveifrons, n. sp.

♂. Slender, aeneous, the elytra aeneo-cupreous variegate with greenish, the antennae, palpi, and legs black, the prothorax and the polished portions of the under surface glabrous, the rest of the surface finely sericeo-pubescent; the prothorax shining and almost smooth, the head, elytra, and abdomen densely, minutely punctured. Head large, obliquely narrowed behind the eyes and deeply bifoveate between them; antennae very long. Prothorax convex, narrow, about as long as broad, constricted posteriorly; deeply, obliquely furrowed at the sides, the two furrows coalescent on the disc, the transverse basal groove limited on each side anteriorly by an oblique-tumid space. Elytra rather long, broad, uneven, abruptly, transversely impressed near the suture before the middle and with a longitudinal groove within the humeri. Abdomen narrow, gradually narrowing from the base; the ventral segments with a polished space extending down their entire length, similar to that on the metasternum; sixth ventral segment triangularly emarginate at the apex. Legs rather slender, moderately long; fourth tarsal joint simple, penicillate.

Length $6\frac{1}{2}$ mm.*Hab.* Ranikhet Division of Kumaon (H. G. C.).

One male, sent last year unmounted with hundreds of specimens of other species of the genus. A slender form allied to *D. annandalei* and *versicolor*, differing from both of them in its much smaller size and less robust build; the obliquely narrowed head (the post-ocular portions being rounded laterally in the insects mentioned), with very deep frontal foveae; and the narrower abdomen, which is very gradually narrowed from the base to the apex. *D. gracilipes* has a similarly shaped head and abdomen, but differs from the present insect in its much larger size, longer limbs, more elongate elytra, etc.

Dianous subtortuosus, n. sp.

Obscure greenish aeneous, the antennae, palpi, and legs black; the head closely, the prothorax densely, confluent, rugosely, punctate; the elytra with dense, fine, vorticose sculpture, the rugae transverse along the suture below the base, crowded and radiating behind the depression on the disc; the abdomen densely, minutely punctate, the ventral segments 1-4, and the metasternum also, with a smoother subglabrous space down the middle. Head rather small, the frontal sulci somewhat shallow. Prothorax about as long as broad, narrowed and constricted posteriorly, obliquely impressed on each side of the disc and canaliculate to near the base, the disc also with a short, narrow, smooth space in the centre. Elytra long, broad. Legs moderately long, not very slender; fourth tarsal joint narrowly, feebly bilobed.

Length $5\frac{1}{2}$ -6 mm. (♀.)*Hab.* Jagthana in Kumaon (H. G. C.).

Three specimens. A form of *D. tortuosus*, a fairly long series of which has been examined, with the vorticose elytral sculpture almost as fine and dense as in *D. lobigerus*, which is a much larger, similarly metallic insect, with strongly bilobed fourth tarsal joint, longer limbs, and a large head. The smaller head, and the denser, finer puncturing of the upper surface (the abdomen excepted), separate *D. subtortuosus* from *D. cameroni*, examples of which were taken at the same locality.

HYPOSTENUS Rey.

H. flavovittatus Champ. (Ent. Mo. Mag. 1920, pp. 165, 174), W. Almora.—Three additional specimens of this insect, taken at Bhatkot, in the Ranikhet District, are now before me. They differ from the single example described in having the flavescent submarginal vitta of the elytra reduced to a short, oblique streak.

H. flexuosus Champ. (*loc. cit.*), W. Almora.—Subsequently sent in abundance from the Ranikhet Division of Almora, these specimens having the yellowish sinuate elytral markings well developed, as in the type.

GEODROMICUS Redt.

G. crassipalpis Champ. (Ent. Mo. Mag. 1920, pp. 241, 245), type taken at Sunderdhunga.—My son writes to say that nearly all his specimens were captured flying over the glaciers at an elevation of about 14,000 ft. or along the streams 2000 ft. lower down; two or three only were taken on the Pindar.

Additional particulars regarding various other *Staphylinidae* have now been received (17.viii.1921):—

Omalium almorense Champ. (*l. c.* p. 241).—On *Berberis* flowers.

Philorhinum floricola Champ. (*l. c.* p. 242).—On *Berberis* flowers.

Phloeonomus pinicola Champ. (*l. c.* p. 242).—The Tanakpur examples were found under the bark of miscellaneous broad-leaved trees.

Amphichroum pindarense Champ. (*l. c.* pp. 243, 244).—The name of the flowering plant should have been *Symplocos crataegoides*, not *crataegus*.

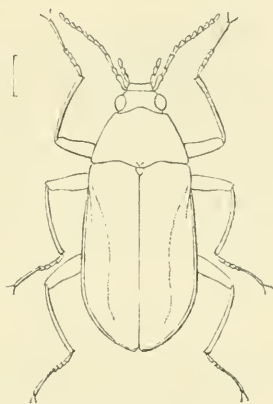
Eudeliphrum gracilipalpe Champ. (pp. 244, 245).—The specimens of this insect were taken from moss at Siahdevi, W. Almora, alt. 6000 ft.

PSEPHENUS Hald.

Psephenus tenuipes, n. sp.

Oblong-oval, broad, widened posteriorly, flattened above, thickly clothed with fine silky pubescence; brownish-piceous, the two basal joints of the

antennae, the epistoma, palpi, tarsi, femora (except at the tip), lower edge of the elytra, and the ventral surface in part, testaceous, the anterior margin of the prothorax rufescent; head and prothorax densely, finely, the elytra extremely minutely, punctate. Head rather small, the epistoma prominent; antennae comparatively slender, slightly tapering outwards, joint 3 elongate, 4-11 gradually becoming shorter, 11 small, oval; maxillary palpi moderately long, joint 2 elongate, 4 oval, stout, nearly twice as long as 3. Prothorax short, rapidly narrowing from the base, bisinuate at the base and apex, the anterior angles prominent. Elytra moderately long, obliquely depressed on the disc below the base, and with faintly impressed longitudinal grooves on the disc. Beneath opaque, finely shagreened, sericeo-pubescent; intermediate coxae separated by about twice the width of the rather broad prosternal process, the mesosternum sulcate down the middle for its reception; ventral segment 5 deeply emarginate, 6 hidden, 7 fully exposed. Legs very elongate; femora



Psephenus tenuipes, ♂.

broad and compressed; tibiae slender and slightly curved; tarsi very slender, the claw-joint curved and longer than the others united, the claws elongated.

Length 5-5½, breadth 2½-3 mm.

Hab. W. and Central Almora Division of Kumaon (*H. G. C.*: viii.1917 and ix.1920).

Two males. Very like the N. American *P. lecontei*, numerous specimens of which have been sent me by Mr. H. S. Barber; differing from that insect in its rather more elongate shape, the prominent anterior angles of the prothorax, the more slender antennae and palpi, the greatly elongated, slender tibiae and tarsi, and the more widely separated anterior and intermediate coxae. The larva of a *Psephenus*, presumably of this species, has been found in the Himalayan streams by both Dr. Inms and my son; it is at present undescribed.

EUBRIA Germ.

Eubria semistriata, n. sp.

Short, rather broad, elliptic, convex, shining; black, the two basal joints of the antennae, the anterior angles of the prothorax, tarsi, and knees, more or less testaceous; densely clothed with extremely fine, short, blackish pubescence which hides the elytral sculpture; the surface closely, excessively minutely punctured, with more distinct punctures intermixed. Head deeply sunk into the prothorax, the eyes large; antennae (σ) about as long as the body, joint 2 extremely short, 3 elongate, 5-10 rather broad and triangular, 11 oblong, (φ) short and slender. Prothorax rapidly narrowing from the base forward, the anterior angles rather prominent. Elytra with five fine, more or less incomplete, impressed striæ towards the sides, a complete sinuous one on the disc at some distance from the suture, and one along the suture itself towards the apex. Legs very slender.

Length $1\frac{4}{5}$ -2 mm. (σ φ .)

Hab. S. Garhwal, alt. 6500 ft., and Ranikhet in Kumaon (*H. G. C.*).

One pair, sent unmounted with other insects captured along the banks of the streams. Separable from the European *E. palustris* Germ. by its regular elliptic shape, the black, densely pubescent body, the testaceous anterior angles of the prothorax, and the very fine impressed lines on the elytra, which are more numerous towards the sides and reduced to one only on the disc.

MALTHINUS Latr.

M. lineatocollis Champ. (Ent. Mo. Mag. 1920, pp. 241, 247), Kumaon.—Numerous additional specimens, including another σ , have now come to hand from the Ranikhet Division of Kumaon. The genus was incorrectly marked as an addition to the Indian fauna, the description of *M. albidipennis* Pic (1907), type from Pegu, Burma, having been overlooked by me, no locality being given for it in the "Zoological Record" for that year.

XYLOPHILUS Latr.

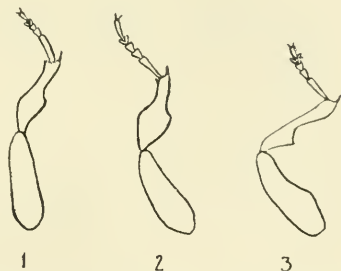
X. himalaicus Champ. [Ann. and Mag. Nat. Hist. (9) v. p. 405 (May 1920)], type φ , W. Almora.—Additional specimens, 1 σ , 2 φ φ , have since been received from the Ranikhet Division of Almora. The σ has the antennae more elongate than the φ , with joints 4-10 all much longer than broad, the anterior tibiae feebly mucronate at the inner apical angle, and the posterior tibiae somewhat abruptly widened from about the basal third onwards, the basal portion appearing more slender than in φ . The allied Cingalese *X. crassipes* Champ. (1915), type σ , has the posterior tibiae in that sex shaped as in *X. himalaicus*, φ , i.e. gradually widened from the base.

A. bipartitus Pic (1901, 1905), type, Mahé, Malabar.—The British Museum has received a pair of this species from its describer. The ♂ has the intermediate femora sharply angulate at the apex within, a character also to be found in one or two other Eastern forms. The same specific name was subsequently (1914) used by Pic for a Guadeloupe insect.

PENTARIA Muls. (ANTHOBATES Lec.)

The additional material now to hand throws further light on the Indian species of the genus, and adds one more to the list.

P. chloroptera Champ., type ♀.—Amongst a long series subsequently sent from the Ranikhet Division of Almora there are four males. In this sex the anterior femora are broad; and the anterior tibiae (fig. 1) are moderately dilated and strongly constricted at the middle (thus



Anterior leg, ♂, of *Pentaria*: 1. *Pentaria chloroptera*; 2. *P. kumaonensis*; 3. *P. luteicollis*.

appearing sinuate or twisted), the widened basal portion being subangular within, rounded externally, and much narrower than in *P. platynema* ♂, the narrow apical portion relatively longer than in that insect. The ventral segments of the males of all the species of this genus are simple, wanting the laciniae, etc., so conspicuous in *Anaspis*.

P. kumaonensis Champ., type ♀.—Found in profusion in Ranikhet in May 1920, eight males having been detected in the series recently sent. In this sex the anterior femora are very stout and the anterior tibiae (fig. 2) almost as broadly expanded as in *P. platynema* ♂, the dilated portion being subangular within and rounded externally.

P. platynema Champ., type ♂.—Four more males have come to hand, from Ranikhet and Khaulā, all showing the extraordinary expansion of the anterior tibiae as figured by me last year (Ent. Mo. Mag. 1920, p. 69, fig. 3). The length (omitted in description, p. 77) is $2\frac{1}{2}$ –3 mm.

Pentaria luteicollis, n. sp.

Very like *P. kumaonensis*: finely sericeo-pubescent, black, the antennae (the infusate joints 7-11 excepted), palpi, prothorax, and legs testaceous; the sculpture of the upper surface extremely fine. ♂. Anterior femora very stout, angulate towards the base beneath, and hollowed thence to the apex; anterior tibiae (fig. 3) sharply triangularly dilated near the base and also widening again at the apex within.

Length (excl. head) 2-2½ mm.

Hab. Ranikhet, Almora District (*H. G. C.*: v.1920).

One ♂, 3 ♀ ♀. Separable at once from the three other Indian *Pentariæ* named by myself by the black head and elytra, the testaceous prothorax and legs, and the form of the ♂ anterior femora and tibiae, the insect coming nearest to *P. chloroptera* in the tibial structure.

July 1921.

A NEW GENUS AND SPECIES OF ORTHOPTERA FOUND IN A
GREENHOUSE IN ENGLAND.

BY B. P. UVAROV, F.E.S.

Dr. L. Chopard, during his recent visit to London, when looking through the collection of English Orthoptera in the British Museum, drew my attention to a couple of specimens (one immature) of wingless, spider-like, long-horned grasshoppers which have been erroneously incorporated amongst the series of the common greenhouse grasshopper, *Tachycines asynamorus* Adel. After a short examination of these two insects, he proclaimed them to belong to an undescribed genus related to *Dolichopoda*, and he left its description most generously to me, though he himself is undoubtedly the best living authority on this particular group. My detailed study of the species confirmed Dr. Chopard's opinion that it belongs to the group "Dolichopodini," and I am very pleased to name the genus after Dr. L. Chopard.

The description of the insect is as follows:—

CHOPARDINA, gen. nov.

Belonging to the group Dolichopodini and closely related to *Gymnoplectron* Hutton, but differing from it in the armature of the legs.

Antennae setaceous, not less than four times as long as the body moderately separated at the bases; first joint somewhat incrassate, about twice as long as thick; second joint much narrower, slightly longer than broad; the following joints short, bearing small scattered hairs; antennal scrobes with the inner margins raised and separated by an interspace subequal in width to the third joint of the antennae. Head vertical; occiput feebly convex; vertex sloping, not vertical, its fastigium in the shape of a rather

small, but very prominent rotundato-pyramidal tubercle, deeply and widely furrowed. Eyes rather prominent, about twice as high as broad; their fore margin straight, hind margin rounded. Maxillary palpi 6-jointed; the last joint somewhat thickened, about five times as long as broad; the fifth joint more than twice as long as the sixth, distinctly longer than the fourth, and subequal to the third. Pronotum with the fore and hind margins widely rounded; all the margins, except the hind one, incrassate; the lower margin of the lateral lobes distinctly convex; the front and hind angles obtuse, rounded. Fore legs moderately long; coxae not spined; femora beneath flattened, but only feebly sulcate, bearing a few scattered small spinules along the fore lower carina, and armed with a pair of short rigid apical spinules on the upper side; tibiae strongly laterally compressed, bearing four rows of spinules, 4-6 spinules in each row, and armed apically with two pairs of spurs (besides one pair of subapical spinules), the lower pair being distinctly longer than the lateral pair. Middle femora with about 5 spinules on the inner lower carina and about 8 on the outer lower carina, with a pair of small rigid apical spines on the upper side and with one spine at the base of the inner knee-lobe; tibiae strongly laterally compressed, with four rows of spinules, 4-8 spinules in each row, and with two pairs of apical spurs (besides one pair of lower subapical spurs). Hind femora basally distinctly incrassate, with the apical half strongly attenuate; about 10 spinules along the outer lower carina and about 12 along the inner one; the knee with two short rigid spinules on the upper side and with one spinule at the base of the inner knee-lobe. Hind tibiae with 1-3 spinules along both of the lower carinae, and with two rather regular rows of 18-20 spinules on the upper side; the apex with one pair of small lower subapical spinules, one pair of larger upper subapical spinules and two pairs of spurs; the upper spurs are more than twice as long as the lower ones, and distinctly less than half the length of the first tarsal joint, rather thick, straight, with the apices pointed, incurved. All the tarsi strongly laterally compressed; each joint of the hind pair (except the apical) with a flattened space at the apex from beneath. Subgenital plate of ♀ convex, transverse. Ovipositor inflated basally, almost straight, near the apex somewhat recurved and pointed. Cerci setaceous, reaching the middle of the ovipositor.

Genotype: *Chopardina importata*, sp. n.

This genus is undoubtedly closely related to *Gymnoplectron* Hutton, of New Zealand, where the group "Dolichopodini" is represented by several genera. It is separable from *Gymnoplectron* by the fore femora being armed with two apical spinules, and by the unarmed hind tarsi. *Chopardina* is related also to the Mediterranean genus *Dolichopoda*, the species of which inhabit caves, but differs from it by the spinulose femora.

CHOPARDINA IMPORTATA, sp. n.

♀. Dirty yellowish-brown. Fastigium of the vertex with the median furrow black. Pronotum with the fore and hind margins brown. Abdomen with the hind margins of tergites brown. Legs unicolorous. Length of body 17 mm.; pronotum 4.5; fore femora 14; middle femora 14.5; hind femora 23; fore tibiae 15.5; middle tibiae 15.5; hind tibiae 26.5; ovipositor 13 mm.

Described from a single ♀ in the British Museum, captured by Mr. W. Drost in a greenhouse at Richmond; the same collector also presented several specimens of *Tachycines asynamorus* Adel., and one immature example of *Chopardina importata*, all evidently taken with the type. There is no doubt, of course, that the new insect has been imported from some exotic country with plants, but it is not possible to tell from what part of the world it exactly came. The group Dolichopodini is as yet insufficiently studied, and the fact that *Chopardina* is most nearly allied to a New Zealand genus is by no means decisive, since further exploration of exotic fauna will undoubtedly result in discovery of many more new forms. In Dr. Chopard's opinion, it is not impossible that the new insect is of Oriental origin, as is the case with *Tachycines asynamorus*, which has been found in hot-houses in Petrograd and afterwards captured wild in China.

Chopardina is at once distinguished from the common greenhouse grasshopper, *Tachycines asynamorus*, by the uniform coloration, and especially by the armature of the hind tibiae, which in *Tachycines* are armed with two rows of very numerous (up to 75) and closely approximated spinules along the upper keels of the tibiae, while in *Chopardina* the spinules are only 18–20 in number and are widely distant from each other.

The new insect is, thus, the second of this group which has been found in greenhouses in Europe, the other being *Tachycines asynamorus* Adel. The latter has been incorrectly recorded many times under the name of *Diestrammena marmorata* De Haan, a Japanese insect not yet detected in Europe. This mistake has been made by many authors, but it has been explained and corrected recently by V. Boldyrev (Bull. Soc. Entom. Moscou, i, p. 31), M. Burr (Ent. Rec. xxvi, 1914, p. 140), R. Ebner (Centralbl. Bakter., Par. und Infekt., vol. 45, pp. 587, 594), and L. Chopard (Bull. Soc. Ent. France, 1914, No. 3, p. 122; Bull. Mus. Hist. Nat., 1914, No. 4, p. 234). The synonymy given in the recently published book on British Orthoptera (p. 98) by W. J. Lucas, who regards *T. asynamorus* as conspecific with *D. marmorata*, is, therefore, erroneous. *T. asynamorus* seems to be not uncommon in hot-houses in England, and undoubtedly breeds there as it does on the Continent and in America. It has been recorded by Dr. Burr (Ent. Rec. xxv, p. 228) from St. Leonards, Sussex, and by Mr. Lucas from Kew Gardens and Ipswich; and the British Museum collection contains specimens from Hastings (in fern-house), Hounslow, Middlesex (hot-house), Richmond (greenhouse), and S. Kensington ("found in kitchen alive").

The discovery of *Chopardina importata*, which possibly also breeds in hot-houses, since a half-grown larva has been captured with the type, shows that additions to the fauna of English greenhouses may still be expected. It is possible, also, that specimens of *Chopardina* are commonly mistaken for *Tachycines*, but the above-given characters render their separation easy. It must be, however, borne in mind that other species of both these genera, as well as additional genera, may occur, and the author will be glad to help with identification of specimens*. The ♂ of *Chopardina* also remains to be discovered, and it is worth while to look for it. Moreover, it must not be forgotten that *Tachycines* is an insect which does not like daylight, and *Chopardina* possibly shares in this aversion; they must be looked for in the darker corners of greenhouses, where they are hiding for the day, being active in the night.

London.

August 1921.

A black variety of Papilio machaon in Norfolk.—The following article, under the heading of "An all-black butterfly," appeared in our daily press on August 11th:—"Mr. J. P. Lloyd, of St. Giles's Vicarage, Norwich, informs *The Daily Mail* that he has captured a black specimen of *Papilio machaon*, the swallow-tail butterfly, on the Norfolk Broads. He adds: I believe this is the only black specimen in existence. The swallow-tail is practically confined in this country to the fens of Cambridgeshire and the broads of Norfolk, especially the neighbourhoods of Wicken Fen and Hickling Broad." This insect is doubtless referable to ab. *niger* Heyne-Rühl (1892-95) of Staudinger and Rebel's "Catalog," 1901.—Eds.: August 1921.

Heptaulacus villosus Gyll. and other Coleoptera in North Yorkshire.—I am much pleased to be able to record the recent occurrence of *Heptaulacus villosus* Gyll. in Yorkshire. I found a single specimen of this rare species on the coast sandhills at Redcar on June 24th. *Stenus foveicollis* Kr. occurred in *Sphagnum* on the moor above Reeth, Upper Swaedalle, in May last, and this year the same species turned up on the moor near Ingleby Greenhow in the Cleveland district at the same elevation (1400 ft.). Last September, *Stenus fuscicornis* Er. was taken in *Sphagnum* at Brignall Banks, Barnard Castle: a northern locality for this south country insect, not previously met with in Yorkshire. In a moorland wood at Kildale in July, *Hapalaraea pygmaea* Gyll., also rare in the north, and *Ephraea florea* Er. were taken on mountain-ash, with *Tetratoma ancora* F. from the Scotch firs growing close by. *Choleva morio* F. dropped from a dead grouse found lying on the adjacent moor. The cosmopolitan beetle, *Ptinus tectus* Boield. has recently been found in some numbers in the bathroom of a dwelling-house at Middlesbrough. I am indebted to Commander J. J. Walker for his kindness in identifying most of the above-mentioned insects.—M. LAWSON THOMPSON, 40 Gosford Street, Middlesbrough: August 1921.

* Specimens may be sent to Mr. B. Uvarov, British Museum (Natural History), Cromwell Road, London, S.W. 7.

Clytochrysus planifrons Thoms. at Penarth.—This wasp appears to have been recorded but twice in this country. Saunders, in Ent. Mo. Mag. 1906, p. 173, mentions that he had a male *ex* Shuckard's collection, without date or locality, and Morice in Ent. Mo. Mag. 1910, p. 272, records the capture of a female in August 1894 at Hillmorton. It is therefore interesting to record that I took a male at Penarth, on a telegraph post, on June 22nd this year. Repeated visits to the neighbourhood failed to produce any further examples. It is noticeably darker in the field than the common *C. cavifrons*. Dr. R. C. L. Perkins has kindly examined the wasp and confirmed the identification.—H. M. HALLETT, 64 Westbourne Road, Penarth : August 8th, 1921.

Methoca ichneumonides Latr. and other Hymenoptera in Glamorgan.—*Methoca ichneumonides* was extraordinarily abundant at Porthcawl in June 1915, as many as 50 females being counted at one time about the burrows of *Cicindela campestris* in the space of a few yards. On the Gower sandhills this July it occurred sparingly, and is there parasitic on *Cicindela maritima*. *Oxybelus argentatus* Curt. occurs on our sandhills in hundreds, principally on flowers of *Euphorbia paralias* and *Carduus arvensis*; it preys on the fly *Thereva annulata*; in comparison with this species, *O. nigrilunus* is scarce. *Spilomena troglodytes* V. d. Lind was plentiful in July this year at Penarth, nesting in old burrows of *Anobium*, and storing their cells with immature *Aphidae*. *Andrena hattorfiana* F. occurred sparingly at Gower this July, and thus confirms Smith's record, made by Dossetor in 1854.—H. M. HALLETT : August 8th, 1921.

The tibial comb of Deraeocoris Kirschb. (= Capsus and Camptobrochis Fieb.)—Mr. H. H. Knight in his exhaustive monograph of the North American species of this genus of *Miridae* (18th Report of the State Entomologist of Minnesota, Dec. 1920) describes and figures a comb-like structure at the distal end of the anterior tibiae, a structure that does not seem to have been noticed by previous writers on this family of Hemiptera-Heteroptera. One of the N. American species, *D. ruber* L. (= *lanarius* L. and *capillaris* F.), a common European insect (the *Capsus lanarius* of Saunders's Hemipt. Brit. Isls.), appears to have been first noticed in the United States about 1886, and its tibial comb is figured by Mr. Knight (Plate ix, fig. B) with that of various other representative species of the genera of *Deraeocorinae*. The structure is thus described:—"The tibial comb lies at the distal end of the fore tibia and in the same plane as the anterior face, there being no difference between the sexes. The comb is composed of a single row of very fine, closely placed, translucent spine-like teeth, set on the very apical margin of the tibia, usually bounded dorsally by one or more thick dark-coloured spines and, ventrally in the same manner, the exact number and arrangement being different for each genus within a related group. The front tibia is always more or less flattened on the anterior face near the apex and usually very distinctly sulcate, these modifications being well adapted for cleaning both rostrum and antennae. On a few occasions the writer has observed living bugs cleaning the rostrum and antennae by applying the front feet one on each side of the member and combing from base towards apex; in such cleaning operations the tibial comb has an important function. The tibial comb is fully developed in all the fourth and fifth stage nymphs which have been examined. A cursory examination of species in other families indicated that the tibial comb is present in

all the Heteroptera having well-developed antennae. In certain species of *Reduviidae* the comb is situated somewhat before the apex of the tibia." This structure can easily be seen in our *Capsus lanarius* and *Camptobrochis lutescens*. In certain genera of Malacoderm beetles (*Idgia*, *Lobonyx*, *Eulobonyx*, *Attalus*, etc.) a conspicuous comb is to be found on one or more of the basal joints of the anterior tarsi, which is perhaps used for cleaning the antennae; but in these insects the comb is much stronger and wholly black, and it is to be found in the ♂ only [cf. Ann. & Mag. Nat. Hist. (9) iii, p. 326, fig., April 1919]. Mr. Knight also makes some interesting remarks on the habits and food of *Deraeocoris*. The nymphs and adults are stated to be able to manage to live on sap alone, but appear to prefer plant-lice or other small soft-bodied insects when such are available. As to where the eggs are laid he has not yet discovered. The species of the subgenus *Camptobrochis* are known to pass the winter in hibernation as adults.—G. C. CHAMPION, Horsell: August 4th, 1921.

Oviposition of Aphelinus chaonia Walker.—The curious behaviour of this Chalcid parasite of the common Black Aphid (*Aphis rumicis*) was brought to my notice by Miss Bertha Reid, whose drawings are well known to those who use the leaflets issued by the Board of Agriculture. Miss Reid watched the minute parasitic flies in the act of attacking the *Aphis* upon marrow plants badly infested by the latter, and I was able to confirm her observations. The fly went from one to another of its victims in rapid succession, so that several must have been parasitized in the course of a single minute. Walking up to a quiescent *Aphis*, the fly first gently felt it with a few alternating touches of her short antennae; then, if satisfied, quickly turned half round, so that her head took the place of her tail, which now pointed towards the *Aphis* without touching it. Then by a rapid extension of the abdomen a sharp stab was administered by the ovipositor. Simultaneously with this action a most remarkable movement of the wings took place. These, which lie one over the other upon the back, were doubled upon themselves by a transverse fold, evidently to allow greater precision to the stabbing action. For a fraction of a second the posterior half of the wing lay flat upon the anterior half, then the weapon was withdrawn, the eggs having evidently been placed within the victim, the wings were brought into the normal position, and the fly moved off to repeat the process. Judging from the speed of the operation, a few individuals would account in an hour or two for many thousands of Aphids. So effective did the attack appear that in a few days the *Aphelinus* seemed to outnumber its prey, whose swarms were reduced almost to vanishing point.—GILBERT J. ARROW, British Museum (Nat. History), Cromwell Road, S.W.: July 29th, 1921.

Review.

"INSECT PESTS OF FARM, GARDEN, AND ORCHARD." By E. DWIGHT SANDERSON. Second edition revised and enlarged by LEONARD MARION PEAIRS. New York: J. Wiley & Sons. London: Chapman & Hall, 1921. 12mo, pp. vi and 707, and 604 text-figures. Prices (in London) 26/- net.

The first edition of this work, by Prof. Sanderson alone, appeared in 1912. The second edition has been thoroughly revised and enlarged by Prof. Peairs,

three new chapters (xxvi-xxix) having been added by him. The present volume deals with N. American insects (under which *Acarina* are also included), but the information given is of equal interest to us on this side of the Atlantic. The pests introduced from Europe are enumerated with the native forms, and the methods of control given at the end of each chapter—29 in all. Amongst the insects imported into the United States, the following European forms amongst others, in addition to various Coccids, are mentioned, and the early stages and imago figured. COLEOPTERA: *Eccoptogaster rugulosus* Ratz. (fruit-tree bark-beetle), *Hyblastinus obscurus* Marsh. (the clover-rot borer), *Sitones hispidulus* F. (the clover-root curculio), *Phytonomus punctatus* F. (clover-leaf weevil), *Bruchus pisorum* L. (pea weevil), *B. chinensis* L. (cow-pea weevil), *B. rufimanus* Boh. (European bean weevil), *Tenebroides mauritanicus* L. (the cadelle), *Silvanus surinamensis* L. (saw-toothed grain beetle), *Lasioderma serricorne* F. (cigarette beetle), *Calandra granaria* L. (grain weevil), *Crioceris 12-punctata* L. and *C. asparagi* L. (asparagus beetles). HYMENOPTERA: *Cephus pygmaeus* L. (wheat saw-fly borer), *Pteronius ribesii* Scop. LEPIDOPTERA: *Pontia rapae* L., *P. napi* L., *Porthetria dispar* L., *Euproctis chrysorrhoea* L., *Pyrausta furinalis* L., *P. nubilalis* Hübn., *Autographa brassicae* L., *Peridromia saucia* Hübn., *Agrotis ypsilon* Rott., *Plutella maculipennis* Curt., *Ephesia kühniella* Zell., *Plodia interpunctella* Hübn., *Sitotroga cerealella* Oliv., *Cydia pomonella* L., *Depressaria heracliana* De G., *Tmetocera ocellana* F. HEMIPTERA: *Lygus pratensis* F., *Aphis avenae* F., *A. brassicae* L., *A. sorbi* Kalt., *A. pomi* De G., *Toxoptera graminum* Rond., *Macrosiphum granaria* Buckt., *Myzus cerasi* F., *Psylla pyricola* Först., etc. THYSANOPTERA: *Thrips tabaci* L. DIPTERA: *Pegomyia ceparum* Bouché. The beneficial insects include the following predaceous forms:—*Coccinella 9-notata*, *Adalia bipunctata*, *Hippodamia convergens*, *Megilla maculata*, *Chilocorus bivulnerus*, *Calosoma sycophanta*, *scrutator* and *calidum*, *Lebia grandis*, and *Harpalus caliginosus*; and such parasitic Hymenopterous genera as *Pimpla*, *Ophion*, and *Aphidius*. Two Chalcids are mentioned amongst the injurious forms, *Harmolita tritici* Fitch (wheat joint-worm) and *H. grandis* Riley (wheat straw-worm); and a Lycaenid allied to *Thecla*, *Uranotes melinus* Hübn. (cotton square-borer), is mentioned as attacking cotton.

The book is extremely well printed and profusely illustrated, and it should be in the hands of all those interested in the insect pests of this country.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, June 1st, 1921.*—The Rt. Hon. LORD ROTHSCHILD, F.R.S., etc., President, in the Chair.

The President announced the death of Dr. Longstaff, and a vote of condolence was passed to his widow and relatives.

Dr. D. Sharp, M.A., M.B., F.R.S., etc., was elected a Special Life Fellow. Mr. P. V. Castling, of Peshawar, India, and Dr. S. C. Harland, D.Sc., of Shirley Institute, Didsbury, were elected Fellows of the Society. The Treasurer made a statement as to the portraits of distinguished entomologists that had been hung in the Society's rooms, and expressed the hope that other

portraits and documents of entomological interest would be presented to the Society. The President read a statement as to the death of a number of distinguished Russian entomologists during 1916-20.

Prof. Poulton exhibited varieties of *Pyrameis cardui*, and an example of a very large *Papilio*, *P. homerus* F., that visits the very small flower of *Asclepias curassavica*; examples of *Libythea*, probably *L. larus* from Tanganyika Territory, congregating perhaps before or during migration; notes on the courtship of *Monomotarpa insignis* Distant; Coprid beetles believed to be internal parasites, and expressed the view that such cases were due to trickery on the part of native medicine men. Comments were made by the President and Mr. Durrant. Mr. Donisthorpe exhibited a specimen of *Argynnis euphrosyne* carrying a portion of the pupa case. Some discussion arose as to the effect of damage to antennae on the flight of butterflies. Dr. Gaban exhibited examples of the larvae of *Phytodecta viminalis*, and called attention to the existence in these larvae of eversible glandular structures between the seventh and eighth dorsal segments. Comments were made by Mr. C. B. Williams, who said that he had found *P. viminalis* to be viviparous. Mr. Morice exhibited:—(1) examples of *Anthophora pilipes*, of which he had seen no ♀♀, and described attempts made by the ♂ to pair with ♀♀ of the Humble Bee; (2) a ♂ sawfly, *Tenthredopsis palmata* Geoffr. with an abnormal wing venuration, apparently a reversion to a primitive type. Mr. Talbot, on behalf of Mr. J. J. Joicey exhibited examples of *Heliconius* from Venezuela. Dr. Dixey, Pierines from Central Peru. Comments were made by the President, Prof. Poulton, and Mr. Rosenberg.

Two papers were read:—(1) By Mr. Donisthorpe on "Mimicry of Ants by other Arthropods," and the author exhibited a number of examples to illustrate this. Comment was made by Prof. Poulton. (2) By Mr. G. J. Arrow on "Erotylid Coleoptera."

It was decided not to hold the informal meeting arranged for June 15th.

NEUROPTERA, MECOPTERA, AND ODONATA FROM MESOPOTAMIA AND PERSIA.

BY KENNETH J. MORTON, F.E.S.

PLATE II.

In addition to the Odonata from Mesopotamia and North-Western Persia mentioned in the "Entomologist's Monthly Magazine," 1919 (pp. 143-151, 183-196) and 1920 (pp. 82-87), a considerable number of other Neuroptera (in the Linnean sense) were collected by Buxton and Evans. The true Neuroptera, Mecoptera, and some additional Odonata are recorded in the present paper. Through the kindness of Mr. Waterston, I have also examined a collection made by Lt.-Col. H. D. Peile, I.M.S., in Mesopotamia, Kurdistan, and West Persia, presented by him to the British Museum, and containing some interesting species not represented in the other collections.

Buxton in the "Entomologist's Record," 1921, in a paper on the Butterflies of Gilan, N.W. Persia, gives some information regarding the forest area of the southern Caspian, in which Enzeli, Resht, and Tula Rud are situated. The other Persian localities mentioned below are Kazvin, south of the Elburz on the plateau, Harunabad near Kerman-shah, and Harir in N.W. Persia. All other localities are in Mesopotamia, excepting Suleimanyeh in Kurdistan.

As I have already indicated, the true Neuroptera from the Caspian region are quite European in character. Perhaps the most noteworthy of those from Mesopotamia are two species of *Gepus*, a genus of *Myrmeleonidae* founded by Navás on an Egyptian insect.

NEUROPTERA.

ASCALAPHIDAE.

Helicomitus dicax Walk.

1 ♀, Amara, 9.vi.18 (*Buxton*); 1 ♀ on dead vegetation in dried-up marsh 12 miles below Amara, 11.ix.18 (*Evans*).

A larva found by Evans at Kizil Robat under a clod (22.xii.18) is very likely referable to this species, as it agrees well with Westwood's figure reproduced by Sharp in "Cambridge Natural History," vol. v, p. 461.

MYRMELEONIDAE.

Palpares libelluloides Linné.

2 ♀ ♀, Kazvin, 20-21.vii.19; fairly common on stony desert (*Buxton*). 1 ♀, Kizil Robat, 450', 6.v.19: "ant-lion imago first emerged" (*Peile*); this example is rather small, the ante-apical spots larger than usual and confluent; the dark lateral line on the abdomen indistinct, but this may be due to immaturity. Although not taken by Buxton in Mesopotamia, he writes that he saw what appeared to be this species at Mendali, just on the Persian border, also flying in stony desert in bright fierce sun at 9 a.m. in July 1918.

Also 1 ♂, 2 ♀ ♀, 12-15.vii.18, Harir, N.W. Persia, 5300 ft. (*Peile*).

Formicaleo tetragrammicus Fabr.

3, Enzeli, 21.vi, 30.vi.19.

Nelees mesopotamiae, n. sp.

Face yellowish with a fuscous line in front of the antennae and one behind them, followed by a pale transverse line; spots on the vertex apparently more or less confluent, giving the whole hinder part a dark appearance. Antennae

light ferruginous, yellowish at the base, scarcely annulated. Prothorax longer than broad, with two median fuscous lines broader posteriorly and separated by a distinct paler line; a fuscous streak on either side starting from a black dot on the anterior transverse sulcus; lateral margins narrowly fuscous. Meso- and metanota variegated with yellowish and fuscous markings, those on former apparently consisting of two narrow median lines with three more or less interrupted lines on either side. Legs yellowish with whitish hairs; anterior femora fuscous, tibiae of two anterior pairs with a dark median and apical annulation; tarsi annulated with blackish.

Wings: fore wings near the base with about six of the costal cellules subdivided by a cross-vein. Venation white variegated with blackish; costa pale, costal veinlets pale but black at the margin and sometimes with dark dots in the middle, pterostigma whitish; subcosta marked with black at the insertion of the costal veinlets; radius pale marked with long black dashes at wider intervals; radial sector towards the apex nearly continuously dark; posterior oblique line hardly marked, subapical short but distinct (in both wings); gradate veinlets in apical portion of wing mostly dark, and the axillae of the apical forks and of some of the veins also dark. The hind wings have the venation less marked with blackish except in the apical third; a few of the veinlets running from the oblique stria to the margin being narrowly shaded with fuscous. (Plate II, fig. 3.)

Length of fore wing 25 mm.

1, Qurnah, 17.v.18 (*Buxton*).

Creagris plumbea Oliv.

7, Kurnah, 17.v.; Kut-el-Amara, 7-8.viii., Amara, 14.vi, 20-31.vii, 5.ix.18 (*Buxton*).

8, Amara, 30.x.17, 16.v., 21.vii, 5-31.viii (at light), 11.ix.18 (on dead vegetation in dried-up marsh 12 miles below Amara) (*Evans*).

2, Baiji, 3.v, Baghdad, 21.ix.20 (*Peile*).

7, Kazvin, 17, 20, 31.vii, 8.viii, 7.ix; Enzeli, 30.vi.19 (*Buxton*).

This long series is not quite homogeneous. Those from N.W. Persia and those from Mesopotamia differ from each other in facies, the former generally partaking more of the European character and having the venation pale reddish with the darker interruptions often faint, while those from Mesopotamia in fully mature examples have the pale parts of the venation whiter with the dark interruptions standing out in stronger contrast. The markings on the pronotum are variable. In the best marked Mesopotamian specimens the median lines are well defined, separate, strongly bulged outwards behind the anterior transverse sulcus with anterior and posterior prolongations turned outwards; from the latter a small dash directed upwards and inwards (apparently on the line of a short diagonal sulcus); on the anterior transverse sulcus a rounded

dot on either side of the median lines; posterior to or connected with the dots a short line, thus forming either a comma-like or semicolon-like marking. The lateral margins in great part marked with a dark line. The pale space between the median lines varies in extent and the markings may tend to be in part obsolete, either actually or on account of the immaturity of the specimen.

In many European examples the median lines show little or no pale space between them, and the other markings may be reduced to the dots on the transverse sulcus and dark lateral margins; in others the median lines may show considerable lateral expansion behind the sulcus.

Two larvae of a species of Ant-lion, found by Evans at Amara on desert-ground (ix.18), may belong to this species, which is evidently a common one in the region, although the markings do not fully agree with Meinert's figure of "*M. pallidipennis*" as reproduced by Sharp (*op. cit.* p. 456).

Creagris irrorata Klug?

1, Amara, 27.vi.18 (*Buxton*).

A small example (length of fore wing, $21\frac{1}{2}$ mm.) has been referred to this species with doubt. The venation is rather strongly variegated with darker spaces, and the markings of the pronotum differ little in general character from those of *C. plumbea* from the same region.

Myrmecaelurus trigrammus Pallas.

4 ♀ ♀, Kazvin, 27.vii, 5.viii, 24, 29.viii.19, stony desert, 4000 ft. (*Buxton*).

Myrmecaelurus atrox Walker.

1 ♀, Amara, 17.vi.18 (*Evans*); 1 ♀, Kizil Robat, left bank of R. Dyala, 25.vi.19 (*Peile*). Mr. Herbert Campion has at my request compared the latter with two specimens in the British Museum, both carrying type labels, standing over the name *Myrmeleon atrox* and agrees with the determination.

Myrmecaelurus sp.?

1 ♀, 1920, Mesopotamia, without further indication of locality (*Peile*).

Head and greater part of the body crushed. Pronotum with three lines, the median interrupted at the sulcus, the lateral lines only reaching thereto, meso- and metanotum with broad black median and lateral lines. Abdomen apparently with black dorsal line and light interrupted lateral lines; blackish beneath. Legs yellow, femora lightly fuscous externally, with tarsi black at the apex. Wings subacute, hyaline, venation mostly black with whitish

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

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THE MUSEUM, HULL;

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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Third Series. No. 82.]
[No. 689.]

OCTOBER, 1921. [PRICE 2/- NET.

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

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interruptions on the main veins; subcosta black at each costal veinlet, radius with longer black and white spaces; costal veinlets in basal portion of fore wings black on margin only; transverse veinlets mostly black in apical half of wing, mostly pale nearer the base; in all the wings a minute black dot at the rhagma and traces of a dot on Cu_1 p before the margin. In radial field before the sector 6 transverse veinlets in fore wings and 5 in hind wings. Radial sector arising considerably beyond furcation of Cu_1 .

Length of fore wing 25 mm., hind wing 23 mm.

I have not given a name to the above example, as Navás has described quite a number of species of this genus which I have not seen. He mentions at least two which have dots at the rhagma, viz.: *M. trigrammus* var. *obscura* from Ouanda, British Somaliland (Mem. Real Acad. de Ciencias y Artes, vol. xi, No. 13, p. 197, 1914), and *M. dioristus* from Obock (Mem. d. Pontificia Accad. Romana, vol. xxxii, Neuropt. Nova Africana, p. 103, 1914).

Cueta lineosa Ramb.

1 ♀, Baghdad, 30.ix.17; 2 ♀ ♀, 16, 18.vi, 2 ♂ ♂, 15.vi, 13.ix.18, Amara; 1 ♂, Kut-el-Amara, 9.viii.18 (*Buxton*).

5 ♂ ♂, 2 ♀ ♀, Amara, 3.v (at light in room), 17.vi, 21.vi; near Chahala, 5 miles below Amara, 29.viii.18 (*Evans*).

1 ♀, Kazvin, 19.viii.19, at light (*Buxton*).

Cueta syriaca Navás?

1 ♀, Kirkuk, 2.x.19 (*Peile*). Differs from *C. lineosa* in the more rounded apex of the wings and the markings on the abdomen. Agrees fairly well with Navás's description, but is referred to his species with some hesitation, as Petersen considers *C. syriaca* to be the same as *C. lineosa*.

Morter hyalinus Oliv.

1, Kut-el-Amara, 7.viii.18 (*Buxton*); 6, Amara, 10.v, 21.vii, 17.viii; near Chahala, 29.viii.18 (*Evans*).

1, Fathah, right bank of R. Tigris, 18.vii.20 (*Peile*).

Myrmeleon inconspicuus Ramb.

1, Enzeli, 21.vi; 1, Tula Rud, 5.vii.19 (*Buxton*).

Gepus buxtoni, n. sp.

Testaceous with blackish markings. Face yellowish with an obscure interrupted line from between the antennae to the clypeus (antennae mutilated); a blackish line behind the antennae followed by a pale space and then by a

dark line, behind which there seems to be another obscure line and other markings. Prothorax with heavy black median line (continued with interruptions to the end of the abdomen), lateral margins blackish; between the lateral markings and the median line an interrupted narrow line. Mesothorax: praescutum with two somewhat wedge-shaped markings on either side of the median line, scutum with interrupted lines, and scutellum with the median line distinct and two black points near its base. Legs: tibiae of two anterior pairs with black annulation at base, middle, and apex; posterior pair at apex only; tarsi annulated with black. Abdomen with interrupted dorsal line and rather broad waved lateral lines with short streaks between.

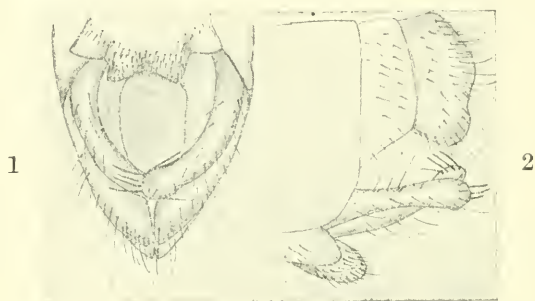


Fig. 1.—Apex of abdomen from beneath of *Gepus burtoni*, ♀.
2.—Apex of abdomen from side of *Gepus burtoni*, ♀.

Wings: fore wing cross-veinlets in 9 to 11 costal cellules proximal to the pterostigma. Venation white, with blackish or brownish interruptions. Many of the costal veinlets with a dark dot in the middle and also at the point at which they anastomose with the costa. Pterostigma yellowish, with three black veinlets on the proximal side. Subcosta with a blackish dash at the base of each costal veinlet up to about the pterostigma. Radius marked with long black dashes alternating with pale intervals up to its joining the subcosta. Rs and branches, also cubiti and branches, with long black dashes; oblique lines (anteapical and on inner margin) present; most of the marginal forks shaded. Colour scheme of hind wings similar, but less strongly marked. (Plate II, fig. 2.)

Length of fore wing 35 mm., hind wing 31 mm.

1 ♀, Basra, 18.viii.18 (*Buxton*).

Gepus invisus Navás.

1 ♂, Kut-el-Amara, 9.viii.18 (*Buxton*).

In referring this ♂ to the above species I have followed Petersen. In the wing-markings it agrees almost perfectly with an Egyptian ♀ so named by that author, but it differs in having double rows of cells between some of the branches of Cu_a . The wing-markings also agree with Navás's figure of *G. curvatus*, which was originally described

as the ♀ of *G. invisus*, and which Petersen is still disposed to consider the same as the latter species.

The cross-veinlets in the costal area of the fore wing of *G. buxtoni* seem to exclude any possible association of the same with this ♂.

The genus is remarkable for the rounded projection at the base of the anterior wing and for the swollen scutellum of the mesonotum.

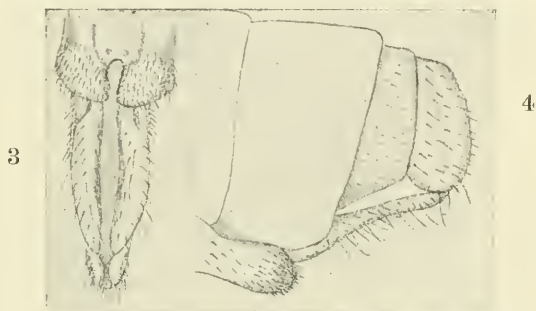


Fig. 3.—Apex of abdomen from beneath of *Gepus invisus*, ♀.
4.—Apex of abdomen from side of *Gepus invisus*, ♀.

For the sake of comparison, I give figures of the apex of the abdomen of a ♀ from Egypt (Ballah, l.viii.16) kindly given me by Mr. Storey.

The wings of the ♂ are figured on Plate II, fig. 1.

Acanthaclisis pallida McLach.

1 ♀, Amara, 10.viii.18 (*Buxton*).

Has been recorded from South Russia and Western Asia.

NEMOPTERIDAE.

Halter halteratus Forskal.

2 ♂ ♂, 3 ♀ ♀, Baiji, near Fathah, R. Tigris, 14–27.v.20 (1 ♂, 2 ♀ ♀ “at light,” and 1 ♂ settled on leaf of *Capparis spinosa* at 7 A.M.), 3 ♀ ♀, Mirjana, R. Djala, 27–30.v.19, “at light” (*Peile*).

Kirbynthia extensa Oliv.

1 ♀, Mirjana, l.vi.19, among grass and flowers, bank of river—“one like this on thistles and other flowers” (*Peile*).

In his Mon. de los Nemopteridos (Mem. Real Acad. de Ciencias y Artes, Barcelona, 1910, p. 386) Navás figures the hind wing of ♂ type

(*Mus. Paris*) with the second dilatation dark at the tip, while the ♀ also figured (*Mus. Vienna*) has the dilatation pale at the tip. The latter is presumably from the Araxes Valley, Caucasus, and Navás proposed the name *litigiosa* in the event of its proving different from *K. extensa*. In his later revision of the *Nemopteridae* (Genera Insectorum, 1912, p. 14) he raises his subgenus *Olivierana* to generic rank, and says that he has seen other examples which have dissipated any doubts that he had as to the identity of the specimens from the Caucasus with *K. extensa*. The present specimen has the second dilatation dark at the tip, thus agreeing with the typical ♂ and with another ♂ from Makatia in my collection.

CHRYSOPIDAE.

Chrysopa vulgaris Schn.

Apparently common about Amara, examples dated February, March, May, October, and November; a long series, 28.v.18, delayed in transit and much damaged from insect attack, appear all to belong to this species (*Buxton* & *Evans*); Jebel Hamrin, N.E. of Baghdad, 1, 30.xi.18 (*Evans*); Resht 1, 18.ii, Enzeli 1, 24.v, Kazvin 2, 17-31.vii.19 (*Buxton*).

Chrysopa septempunctata Wesm.

1, Enzeli, 30.vi.19 (*Buxton*).

Chrysopa abbreviata Curt.

1, Enzeli, 12.vi.19 (*Buxton*).

Chrysopa sp. ?

1, Amara, 24.ix.18, at light (*Buxton*). A very small species (fore wing about 7 mm.), not in good condition, which in the meantime remains undetermined.

Chrysopa tigridis, n. sp.

Reddish testaceous, but not in good condition and probably discoloured. Head reddish, markings uncertain; antennae (incomplete) slender, pale with fuscous lines above and externally on basal and second joints. Legs (anterior and intermediate incomplete) whitish, tarsi with short black spines.

Wings vitreous; venation mainly whitish, with brownish dots and spots in fore wings, most of the costal veinlets pale in the middle only; veinlets between radius and sector strongly margined with brown anteriorly; dark dots mostly where transverse veinlets anastomose with main veins and at the termination of marginal forks; eight rather conspicuous dark blotches—namely, at pterostigma, at apex of wing near termination of radial sector, at outer margin, at gradate series of veinlets, at base of radius, and three on inner margin, the

subbasal one being clear in the middle. In hind wings the costal veinlets entirely dark; small blotches at pterostigma, near apex of radius, and subbasal on inner margin. (Plate II, fig. 4.)

Length of fore wing 10 mm.

A single specimen, Amara, 14th September, 1918 (*Buxton*).

Allied to *C. fedtschenkoi* McLachl. Although the colours and markings of the body in the type are not in a satisfactory condition, the species should be easily recognized from the wing-markings. The minute particles dusted over the wings in the photograph are apparently due to the presence of adventitious matter.

NOTE.—Since the foregoing was written, Mr. Campion of the British Museum has submitted another example of *C. tigridis*, in which the colours are better preserved than in the type. Frons with a reddish line under the antennae; a black line on the genae; clypeus laterally edged with black; raised vertex bordered with reddish and apparently two faint brownish median lines; middle of dorsal surface of thorax and abdomen pale; pronotum rather broadly margined with brownish, the dark margins with short black spinose hairs; indistinct brownish linear markings on meso- and metanotum.—Daurah, R. Tigris, June 1920, along with a specimen of *Helicomitus dicax*, both taken by Major A. D. Fraser.

HEMEROBIIDAE.

Boriomyia persica, n. sp.

♂. Similar in appearance to other species of the *nervosa* group: three radial sectors in type.

Head yellowish above, face shining brownish; thorax above yellowish,



Fig. 5.—Apex of abdomen from side of *Boriomyia persica*, ♂.
6.—Apex of appendages of *Boriomyia persica*, ♂, from beneath.

margined with dark fuscous; legs pale, femora at the apex with a slightly darker tinge; tarsi also slightly darker. Abdomen mainly blackish fuscous.

Wings hyaline; fore wings mottled with the usual angulate greyish markings: neuration whitish, interrupted with dark irrorations; along the costal margin faintly indicated small greyish spots, the other margins with larger more conspicuous greyish markings, alternating with distinct paler spaces; gradate nervules, especially those of the inner series, margined narrowly with fuscous, that between median and Cu_1 distinctly so; a dark subbasal marking on Cu_1 .

Appendages viewed laterally broad, straight on the upper margin, to which the outer margin is almost at right angles; at the lower angle the apical portion of the appendage is abruptly incurved, much narrowed, and terminating in a point, the apices of the two appendages overlapping.

Length of fore wing $7\frac{1}{2}$ mm.

Enzeli, 1st May, 1919 (*Buxton*).

MECOPTERA.

PANORPIDAE.

Panorpa nigrirostris McLachl.

2 ♂♂, 10.iv, 1.v; 1 ♀, 30.iv.19, Enzeli, common in alder swamps (*Buxton*).

Figured by McLachlan (Trans. Ent. Soc. Lond. 1869) under the name of *P. picta* Hagen, but subsequently (Ent. Mo. Mag. vol. xix, 1882, p. 132) separated therefrom under the name of *P. nigrirostris*. The typical locality is South Russia.

ODONATA.

Calopteryx splendens intermedia Selys.

These may be separated into two forms following Barteneff's views.

(1) *intermedia intermedia* (wings in both sexes with an opaque apical space). 1 ♂, 2 ♀♀, 15.vii; 1 ♂ early September; 2 ♂♂, 2 ♀♀, 7.ix.18, Harunabad near Kermanshah (2 of the females, 7.ix, are simply labelled Kermanshah, but from the date they are probably from Harunabad).

Larger than *persica*. De Selys (Ann. Soc. Ent. Belgique, xxxi, pp. 39, 41) seems to have had but a single ♂ before him. He says that the opaque terminal space begins some five cellules before the nodus. From the present material, this extent may be slightly exceeded. In the ♀ the darker colour begins about the nodus or a cell or two beyond.

(2) *intermedia persica* Bartenef (♀ usually with the wings hyaline or at most slightly tinged with brownish).

1 ♂, 1 ♀ (pair) 22.x.18, Kanikin, Mesopotamia; 4 ♂ ♂ (sub. juv.), 3 ♀ ♀, 1 ix.18, Suleimanyeh, Kurdistan.

1 ♀ from the latter locality, with apex of wings opaque from 4 or 5 cells beyond the nodus, may be regarded as an aberration. The other examples, except in their being smaller, might be referred equally well to the following form.

intermedia cecilia Bartenef. Two ♂ ♂ received from Bartenef (Signakh, Caucasus) are very similar to the above. They differ slightly *inter se* in the same way as above mentioned in the extent of the opaque colour. The wings of the ♀, according to Bartenef's figure, appear to be entirely hyaline.

It may be of interest to refer to some of the other named forms.

mingrelica Selys, who states that the terminal opaque part of the wings of the ♂ commences 8 to 12 cellules beyond the nodus; in one the terminal margin very lightly hyaline. In two examples received from Bartenef, in my collection, the opaque colour begins 6 cellules or so beyond the nodus in the fore wings. The female is figured by Bartenef as with entirely hyaline wings.

amasina Bartenef is represented in my collection by a long series. In the majority of the examples the dark colour begins just at the nodus or a cell or two beyond, and the extreme apex is very narrowly hyaline, rather more in two or three examples which are not so fully mature, and which are very similar to the ordinary northern form. In one of the latter, however, the dark colour begins about 11 cellules beyond the nodus—in this respect coming near *mingrelica*, but the apex is hyaline.

In all of the above forms the network of the wing venation is closer than in the following, in which the opaque apex of the wings in the male begins considerably beyond the nodus.

orientalis Selys: ♀ with apex of wings opaque.

transcaspica Bartenef: ♀ with wings entirely hyaline.

syriaca Selys: ♀ with apex of inferior wings only opaque. In some females the wings are practically all hyaline, only slightly tinted with brownish at the apex, but these latter may not be fully mature.

syriaca hyalina Martin, which I have not seen, appears to have the wings hyaline in both sexes, in this respect resembling the Algerian *exul*.

I may mention that since writing my notes on *C. transcaspica* (Ent. Mo. Mag. 1920, p. 83) I have seen further examples of this form confirming the entirely hyaline condition of the wings in the female. These are from Arwas and Askabad.

Lestes sponsa Hansemann.

Another ♂ of this species taken as early as 28th May (*Buxton*).

Ischnura bukharensis Bartenef?

1 ♀ (orange), Kirkuk, 1.x.19 (*Peile*). Very teneral, but probably of this species.

Ischnura elegans Vanderl.

1 ♂, Enzeli, also 28th May, '19 (*Buxton*).

Platynemesis latipes dealbata Klug.

1 ♂, 1 ♀, Kirkuk, 20.viii.19 (*Peile*).

Anax parthenope Selys.

Two fine males. Kazvin, 15 & 18.ix.19, one flying in stony desert, the other "came to light" (*Buxton*).

Onychogomphus forcipatus Linné.

1 ♀, Kazvin, 18.vii.19 (*Buxton*).

A small and somewhat immature example is referred to this species, but it would be desirable to see the male.

Onychogomphus flexuosus Schn.

1 ♀, Baiji, 8.vi.20. Prey of Asilid (*Peile*).

In very teneral condition; determination slightly doubtful.

Anormogomphus kiritschenkoi Bartenef.

1 ♂, Fathah, right bank of R. Tigris, 3.vi.20 (*Peile*).

Orthetrum brunneum Fonscol.

1 ♂, 17.vii; 2 ♀ ♀, 17-27.vii.19, Kazvin (*Buxton*).

The ♂ very pruinose and with much frayed wings.

Sympetrum striolatum Charp.

2 ♀ ♀, 27.v, 1 ♂ (teneral) 28.v; 2 ♂ ♂, 1 ♀, 30.v.19, Enzeli (*Buxton*).

Sympetrum decoloratum Selys.

1 ♂, Baiji, 23.v.20 (*Peile*).

Sympetrum fonscolombei Selys.

2 ♀ ♀, Kazvin, 17.vii.19. Common on stony plateau by streams (*Buxton*).



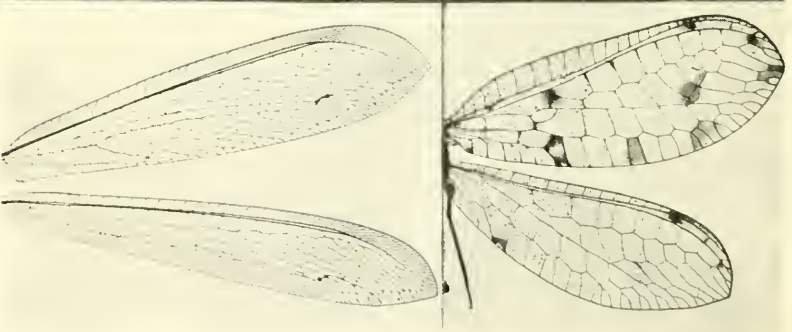
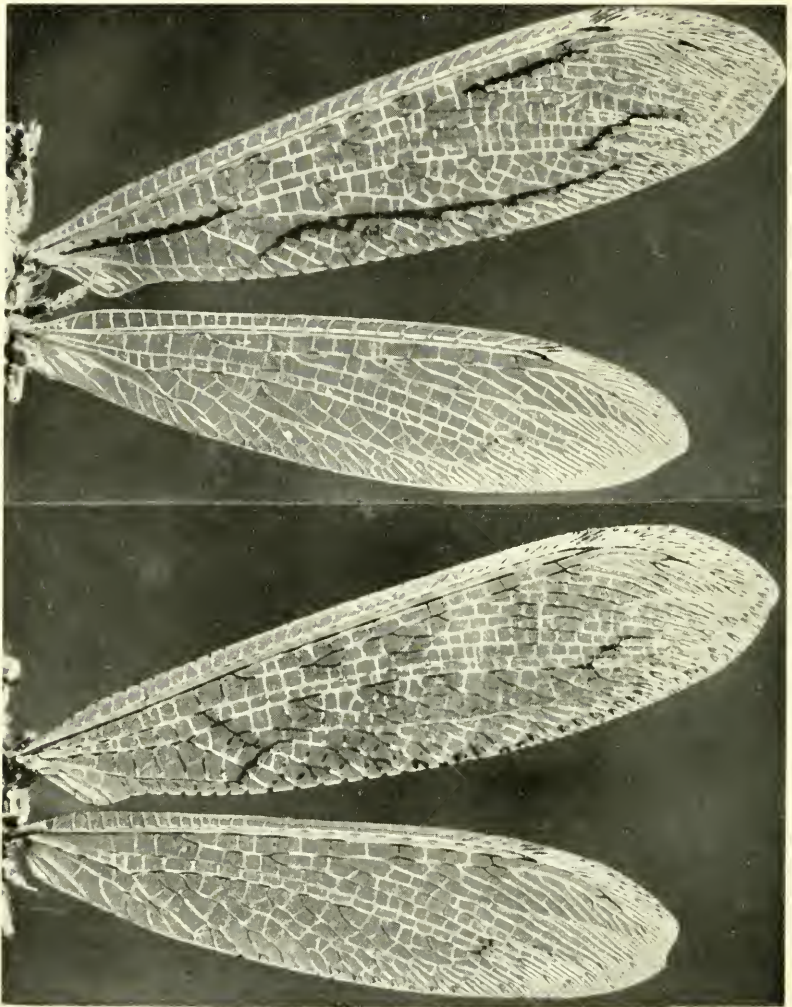


Photo: F. W. Campion.
Esbén Petersen.

WINGS OF NEUROPTERA FROM MESOPOTAMIA.

I am indebted to Mr. Esben-Petersen for his kind assistance with the determination of the *Neuroptera* and for a number of photographs, of which two are reproduced on Plate II. For the fine photographs of the wings of the two species of *Gepus*, special thanks are due to Mr. F. W. Champion, who, co-operating with his brother Mr. Herbert Champion, has responded in a very successful way to my desire for something that would show, not only the venation of the wings, but also, as far as possible, their markings.

EXPLANATION OF PLATE II.

- Fig. 1. Wings of ♂ *Gepus invirus* (Kut-el-Amara).
 2. " " ♀ *Gepus buxtoni* (Basra).
 3. " " *Nelees mesopotamiae* (Qurnah).
 4. " " *Chrysopa tigridis* (Amara).

13 Blackford Road, Edinburgh.

May 1921.

STENOPELMUS RUFINASUS GYLL., AN ADDITION TO THE LIST OF BRITISH COLEOPTERA.

BY OLIVER E. JANSON, F.E.S.

In July last I spent a fortnight beetle-hunting in the Norfolk fens, most of the time being devoted to dredging in the innumerable dykes that intersect the marshes adjacent to the River Bure, between Wroxham and Horning, in another unsuccessful attempt to re-discover the rare *Bagous binodulus*. I found all water-frequenting Coleoptera to be unusually scarce, but on July 24th, the last day of my visit, my efforts were rewarded by finding in the net a small weevil, quite unknown to me and with the affinity of which I was much puzzled. On showing this to Mr. Champion upon my return, he, with his special knowledge of the European and American *Curculionidae*, was able to identify it at once as *Stenopelmus rufinasus*. This species was originally described by Gyllenhal (Schönh. Gen. et Sp. Curc. iii, 1836, p. 469) from North America, and subsequently by Bedel (Bull. Soc. Ent. France, 1901, p. 358), under the name of *Degorsia champenoisi*, from specimens taken in the Depts. of Eure and Charente-Inférieure in France, where it was found associated with a small aquatic plant of the genus *Azolla*, that is stated to have been introduced from North America and now become naturalized in France.

There is some diversity of opinion as to the position to which *Stenopelmus* should be assigned in the classification of the *Curculionidae*. Leconte included it in the "Erirhini," as the type of a special group he

named "*Stenopelmi*," and in the last European catalogue it is located in the "*Tanyssphyrini*," of which our only British representative is *Tanyssphyrus lemnae*, and to this it certainly bears no superficial resemblance. In its form, short thick rostrum, clothing, and coloration, *Stenopelmus* is most like a small *Rhinoncus* (with which it agrees in having a seven-jointed funiculus) or *Phytobius*, but has a narrower thorax with a raised median line and no tubercles or prominences, the eyes are less prominent and more coarsely granulated, the legs more slender and with the third tarsal joint not deeply bilobed or dilated. The rostrum, antennae, and legs are red. A full description of the insect by Bedel will be found at the reference before cited, and further notes by the same author (Bull. Soc. Ent. France, 1904, p. 23) give some particulars of its larva and habits from observations made by him from living specimens kept in confinement.

I should consider the most probable explanation of the presumed introduction of this beetle into Europe from America is that it has been carried in the egg or pupal stage, affixed to its very small food-plant, attached to the feet of migratory water birds. Mr. K. G. Blair tells me he has observed the *Azolla* in Essex, and I shall be interested to see if it is to be found in the Norfolk fens on my next visit.*

I regret that I was unable to secure more than a single specimen of this interesting addition to our known fauna, but, as it was only discovered on the eve of my departure, there was very little time to work for more. Having, however, noted the precise spot where it occurred, I hope to obtain others when I have an opportunity of again visiting the locality.

95 Claremont Road, Highgate, N. G,
Sept. 9th, 1921.

[*Tanyssphyrus lemnae* L. and *Baris scolopacea* Germ. are also found in N. America.—G. C. C.]

ANTHONOMUS CINCTUS KOLLAR IN BRITAIN.

BY P. HARWOOD, F.E.S.

A single example of this handsome weevil was captured by myself on August 14th last in the orchard adjoining Darenth Wood. It was found under apple bark, in company with *A. pomorum*. A subsequent visit to the same locality failed to produce any further specimens, but it

* This curious Cryptogamic plant (*Azolla carolinensis* Willd.; Nat. Order *Salvinaceae*) is abundant in late winter and early spring on shallow ditches and field-drains at Wolvercote (Oxon), where it forms a very conspicuous feature from the blood-red colour which it assumes at certain stages of growth.—J. J. W.

is probable that it will be found in other orchards in Kent in the near future.

Mr. Champion has confirmed this capture, and added a few notes on its distribution, etc.

2 Westbury Terrace,
Westerham, Kent.
September 16th, 1921.

[*Anthonomus cinctus* Koll.

Amongst our British *Anthonomi*, *A. cinctus* Koll. (= *pyri* Boh. and *bituberculatus* Thoms.) is perhaps nearest allied to *A. chevrolati* Desbr. It is a more robust insect than the variable *A. pedicularius* L.; the tooth on the anterior femora is very long and stout; the elytra have the third interstice swollen at the base, and the subapical white fascia (which in some specimens covers the greater part of the apical declivity) is sharply defined anteriorly; the rostrum is very long and rugose; the prothorax is moderately rounded at the sides, and the white line extending down the middle of the disc is sharply defined. According to Bedel *A. cinctus* is found in orchards and nurseries, and he states that the larva lives in the buds of pear-trees; Reitter says "in the blossoms of apple and pear." The species is widely distributed on the Continent, ranging from Sweden to the South of France and Piedmont, and eastward to the Adriatic; and it may not be a desirable addition to the British list, if destructive in the larval state, as *A. pomorum* L. appears to be in certain localities. The life-history has been described by Aubé (Ann. Soc. Ent. Fr. 1868, p. 434). Mr. Harwood's specimen agrees well with my examples of *A. cinctus* from Rouen and Istria. The specific name, *pyri* Boh., is adopted by Bedel, Reitter using the later name, *cinctus* Kollar. It is perhaps worth while to notice that *A. pomorum* is to be found on the crab-apple, and I have seen it in abundance on this tree in the New Forest, and at Gomshall and Woking; but of its depredations on the cultivated apple in orchards I have no personal knowledge.—G. C. C.]

ARADUS BETULAE L., AN ADDITION TO THE BRITISH
HEMIPTERA-HETEROPTERA.

BY P. HARWOOD, F.E.S.

On July 10th last I found this fine Hemipteron in some numbers under bark of an old birch on the edge of the famous birch-woods at Rannoch, near the hamlet of Camaghouran, but, though I searched

a good many suitable-looking trees, I failed to find the insect elsewhere.

Mr. Champion kindly identified the species for me, and I am indebted to him for the description and notes as to distribution.

2 Westbury Terrace,
Westerham, Kent.

September 16th, 1921.

[*Aradus betulae* L.

Broader and more elongate than *A. corticalis* L., and readily separable therefrom by the blacker general coloration; the long, comparatively slender antennae, with very elongate second joint; and the more broadly foliaceous sides of the pronotum. The Rannoch specimens, a ♂ and ♀ of which have been given me by Mr. Harwood, may be described thus:—

Black, variegated with pale greyish brown, the expanded margins of the pronotum almost wholly of that colour, the markings on the connexivum reddish. Head with a long, stout central lobe in front; antenniferous tubercles long, acute; antennae long, rather slender, joint 2 more than three times the length of 3, 3 a little shorter than 4; pronotum broadly, arcuately dilated at the sides, 4-carinate on the disc and with a longitudinal prominence on each side near the hind angles, the margins with coarse scattered teeth, the one at the anterior angles prominent; elytra rapidly, sinuously narrowing from a little below the base, leaving the broad connexivum exposed; membrane in ♂ almost covering the terminal genital segment, in ♀ leaving two segments exposed.

Length 8–9 mm.

Continental specimens of this widely-distributed insect are usually paler than these Scotch examples, and have the third antennal joint in part testaceous, this joint also varying in colour in a similar manner in *A. corticalis*; two *A. betulae* before me, from the Caucasus and the Amur respectively, have the third joint black, as in the Rannoch insect. I have taken *A. betulae* and *A. corticalis* in numbers in different stages of development at Binn, Switzerland; *A. corticalis*, singly, in the New Forest; and *A. betulae* at Vizzavona, Corsica; Gabas, Basses Pyrenees, Macugnaga and Pré St. Didier, N. Italy, and Logroño, Spain, the specimen from the last-named locality having been named for me by Reuter. *A. aterrimus* D. and S. and *A. truncatus* Fieb. (= *lawsoni* Saund.) have a shorter second antennal joint to the antennae than *A. betulae*, and also differ from it in other particulars. Good figures of the males of *A. depressus* F., *A. truncatus* Fieb., and *A. corticalis* L. are given by E. Saunders in his "Hemiptera Heteroptera of the

British Islands" (1892). *A. betulae* is an important and unexpected addition to our list, and it seems strange that such a conspicuous Hemipteron should have hitherto escaped notice in a well-worked locality like Rannoch.—G. C. C.]

NOTES ON THE OVIPOSITION AND HABITS OF THE IRIS SAWFLY,
RHADINOCERAEA MICANS KLUG.

BY HUGH SCOTT, M.A., SC.D., F.E.S.

This conspicuous, shining black sawfly, the very wings of which share in its general blackness, looking as though they had been washed over with dilute ink, was formerly known as *Monophadnus iridis* Kalt. It was introduced into the British list by Mr. F. D. Morice in 1904 (Ent. Mo. Mag. p. 99) and referred to in his "Help-notes," no. 18, in 1907 (Ent. Mo. Mag. p. 79); but apparently no record of it as British was published again till 1917, when Dr. T. A. Chapman described and figured the larva, which was found abundantly on the wild yellow flag (*Iris pseudacorus*) at Woking (Ent. Mo. Mag. 1917, pp. 224-8, pls. v-vii). The following is not intended to be a complete account of the life-history of the insect, but as it seems that certain points in its life-cycle, especially the method of oviposition, are not well-known, these notes are offered for publication.

On July 30th, 1920, my attention was called by Mr. Preston, Curator of the Cambridge Botanic Gardens, to the presence of numerous larvae on the yellow iris (as before, *Iris pseudacorus*) at the edge of the large pond in the Gardens. The larvae had been very numerous, so that throughout a long bank of the iris on one side of the pond nearly every leaf had been eaten on one or both edges, but an isolated clump of the plant a hundred yards or more away on the other side of the pond seemed entirely untouched. Nearly all the larvae had already left the plants to go into the soil, but about 11 were found, and 9 of these were kept and fed in a glass vessel with gauze stretched over the top and about 3 inches depth of soil at the bottom. By Aug. 9th only 3 remained, still feeding, above the surface of the soil. On Aug. 12th only two remained above and one of these had just moulted. By Aug. 16 the last larva had disappeared below the surface. The vessel was kept through the autumn and winter in the Insect Room of this Museum, where a fire was burning in the cold weather during working hours, and the soil was lightly moistened about once a week with one or two pipettes-full of

water scattered on its surface. It was never allowed to become so dry that the water stood in drops or would not easily soak in. Under this treatment partial success was attained. Four adults emerged in the spring of 1921, as follows: April 8th (♂), April 10th or 11th (♂), April 13th (morning, ♀), May 8th or 9th (♀). These were killed and preserved. The other five failed to emerge, and later in the year the soil was turned out and their earth-coated cocoons were preserved.

At various times during the spring and summer of 1921 I returned to the patch of iris in the Botanic Gardens and made the following notes. The times of day are given throughout in "summer time." My first visit was on April 28th at about 6.45 p.m., a brilliant evening, but with cold wind. Several dozen of the adult sawflies were sitting torpidly on the iris leaves, which were still very short. On April 29th, at about 2 p.m. and in blazing hot sunshine, the insects appeared to number a hundred or two. Though less torpid than on the preceding evening they were all sitting still on the flat faces (not the edges) of the leaves, mostly head downwards, some head upwards, but none across the leaf. When disturbed they flew, but reluctantly and only a few feet. Some could be picked up in the fingers, and they have markedly the habit of dropping from the leaves "sham dead" when touched. No signs of pairing or egg-laying were observed. On April 28th four specimens were taken, two being chosen because they looked especially small, and these proved to be ♂, while the other two were ♀; on April 29th six were taken with a random sweep of the net, and all proved to be ♂.

On May 1st, 3-4 p.m. and a bright afternoon, the insects were flying short distances rather frequently without being disturbed. Several ♀ were inserting their "saws" into the flat sides of the leaves near the thickened middle part. One made several punctures in rapid succession one below the other, $\frac{1}{4}$ to $\frac{1}{2}$ inch apart, but so rapidly that I doubt if it actually laid eggs in them. Another remained for some time motionless with the ovipositor inserted into the leaf. This was the only occasion on which the insects were watched piercing the leaves, though adults were seen on the plants in diminishing numbers at intervals up to May 16th, when they were very few. My next visit was not till May 29th, when no adults were visible, but groups of young larvae were found for the first time, some of them having already moulted once, as their cast skins testified. No further visit was made for a long interval, till July 5th, when a number of larvae were seen on the iris and the leaves were found to be much eaten, in some cases only a very narrow strip of the thickened middle part being left for about 9 inches down

from the apex and all the rest on both sides of the middle being eaten away.

Oviposition.—On May 29th, when the young larvae were first seen, it became clear how the eggs are placed. After the hatching of the larvae the edges of the leaf-tissue round the emergence-holes turn brown, rendering the holes easy to see, though careful search had failed to reveal the eggs in the leaves before hatching. Two leaves showing groups of emergence-holes were dried and preserved. These holes, where larvae have emerged on hatching, are situated in groups on the flat surfaces of some of the shorter outer leaves (leaves about 9–12 inches long, the first in the season to develop), and were hidden low down among the taller younger leaves and flowering stems. In the two leaves preserved all the holes are on one face, and they are scattered over 2–3 inches of the length of the leaf near its base. They are irregularly placed, at distances from about $\frac{1}{10}$ to $\frac{2}{5}$ inch (about 3 to nearly 10 mm.) apart. There are 12 or 13 such holes in one leaf, 5 in the other. They lie along the thickened middle part, but there are some other holes nearer the edge, which may either be egg-holes or places where the new-hatched larvae have eaten the leaf. Careful examination failed to reveal any indication of eggs having been laid in the flowering stems of the plant, which, moreover, were not grown up at the time when signs of egg-laying were noticed. The oviposition is therefore quite different from that of the closely related *Phymatocera aterrima*, which lays its eggs in a very close, regular, longitudinal series in the stems (not leaves) of Solomon's Seal, *Polygonatum* (F. D. Morice, Proc. Ent. Soc. London, 1911, pp. elxiv *et* sqq. and pl. 1; and T. A. Chapman, *op. cit.*).

As regards other occurrences of the Iris Sawfly in this country it can be added that on May 14th, 1921, I saw several adults sitting on a clump of the yellow iris at Fulbourne, about 5 miles from Cambridge, but no traces of eggs or larvae were visible: and on July 19th, 1921, some full-sized larvae were found by a party of students on the banks of the River Lark at Mildenhall, Suffolk. Mr. Morice tells me that Mr. Collin found it a few years ago in his garden at Newmarket; that it occurs all over the Woking district each spring; that it has been sent to him from Cheshire; but that he has not yet had it reported from Hampshire, though one or two careful observers of sawflies have looked for it in that county.

The normal food-plant of the insect appears to be the yellow flag (*Iris pseudacorus*), but Mr. Morice informs me that according to Enslin it will feed on other species of *Iris* in gardens, and he himself

has found that it does not refuse the purple *Iris* in his garden at Woking. Some larvae placed on a clump of the latter plant did not, however, complete their development, but they may have been picked off by birds.

Larvae of *Phymatocera aterrima*—which is also shining and black, even to the wings, its blackness scarcely relieved by the very slightly paler hue of the front tibiae—have been very abundant on Solomon's Seal in some Cambridge gardens this summer, the plant being in some places quite stripped by them. I remember noticing a similar abundance of this insect in 1911 at Henley-on-Thames and at Teddington, Middlesex. Both 1911 and 1921 were seasons of heat and drought, and I have thought that such conditions might specially favour this sawfly. But Mr. Morice has had a contrary experience to mine, for in 1921 he has for the first time seen no larvae or imagines of this insect at Woking. Usually, he relates, the larvae appear quite plentifully there—not, however, in the heat of the day, but in the evening.

University Museum of Zoology, Cambridge,
Aug. 30th, 1921.

The black variety of Papilio machaon in Norfolk.—Mr. J. P. Lloyd, the fortunate captor of the black aberration of *P. machaon* recorded in the September No. of this Magazine (*anteâ*, p. 209) has furnished us with a very interesting account of the circumstances of its capture at Ranworth. When first observed, it was flying near the tops of some trees in company with an ordinary *P. machaon*, and it settled high up among the branches. Another *machaon* approached, and the stranger came down almost within striking distance, when, instead of being, as was at first thought, a *Fanessa io*, it was seen to be a black "swallow-tail." Again returning to the tree-tops it shortly afterwards came down after another *machaon*, and then disappeared for a considerable time. Mr. Lloyd then caught and liberated several more "swallow-tails" near the trees in the hope of once more attracting the insect within reach, but without any result; and, after a vain search in the marshes near at hand, he returned once more to the spot where it had been last seen for a final effort. Suddenly the black butterfly sailed downwards, and this time it settled on a bush; Mr. Lloyd had only a landing-net with him, but a lucky stroke with this inadequate weapon secured the prize with fortunately only very slight damage. The predilection of the insect for the tops of trees is certainly a departure from the ordinary habit of the species. The ab. *niger* of *P. machaon* appears to be excessively rare, only about half-a-dozen specimens having so far been recorded. We understand that the unique British example has found a permanent home in one of the principal private collections of *Lepidoptera*.—EDS.

Abraeus granulum Er. at Tubney, Berks.—The famous "Tubney Tree" which stood on the roadside between that village and Fyfield was probably the largest wych-elm in Berkshire, but for many years past it has been in an

advanced stage of decay ; and a few weeks ago the fall of one of its two gigantic limbs rendered the tree so unsafe that it became necessary to fell what remained standing. Unfortunately the huge hollow stump, which measured fully 25 feet in circumference, was burnt out just before I visited it on August 19th. The tree had at one time harboured the largest colony of *Cossus ligniperda* that I have ever seen, but this has long been deserted and dried up ; a limited amount of wet rotten wood in one of the great branches produced the rare little *Abracus granulum** (an addition to the Victoria County History list of Berkshire *Coeloptera*) in considerable numbers, unaccompanied by its more ordinary congener *A. globosus* Hoffm. The only other beetle met with worth mentioning was *Quedius microps* Grav., very sparingly.—JAMES J. WALKER, Oxford : September 17th, 1921.

Eudectus whitei Sharp at Rannoch.—It is with pleasure I have to record the capture of a single example of this rare Staphylinid beetle near the summit of Cross Craig, Rannoch, on July 16th last. I believe only two other British examples of *Eudectus* are recorded, one of these differing considerably from the type of *E. whitei*, which was figured some years ago in this Magazine. I am again indebted to Mr. Champion for confirming the identification of this species.—P. HARWOOD.

Phalacrus substriatus Gyll. at Nethy Bridge.—Within about 100 yards of the cottage which we occupy when spending our summer holidays at Nethy Bridge is a low-lying boggy piece of land where the Bog Asphodel (*Narthecium ossifragum*) grows freely ; it is usually, however, so water-logged that it is not possible to work it for insects. The summer of 1919 was in that area of Scotland quite as dry as the present one, and in the month of August 1919 I found on my arrival at Nethy Bridge that it was possible to walk all over this boggy area. Mindful of an old record in an earlier volume of this Journal that *P. substriatus* had been swept freely off the Bog Asphodel, I determined to try my luck. The first sweep produced several specimens, and I continued to take the insect freely as long as the flowers lasted—that is, until quite the end of the month. Canon Fowler (Col. British Islands, vol. iii, p. 155) states that only four species of *Phalacridae* are recorded from Scotland and that these are all local or rare. It is therefore desirable to place on record the occurrence of so uncommon a species as *P. substriatus* in plenty so far north as Nethy Bridge, the previous Scottish record being “rare, Lowlands, Tweed and Solway districts.”—T. HUDSON BEARE, 10 Regent Terrace, Edinburgh : August 1921.

Nebria livida F. at Mundesley, Norfolk.—I have found this local species in considerable numbers at the base of the cliffs here during the present month. It is of course well known to occur on our Eastern coast, and has been recorded from Cromer and Happisburgh, places not far distant from Mundesley.—LEONARD G. COX, 90 Marine Parade, Worthing : August 17th, 1921.

Silpha (Xylodrepa) 4-punctata near Sheffield.—In extension of Mr. C. Morley's note in this Magazine (*anted*, p. 154), I can state that this insect has occurred fairly commonly in several woods to the south of Sheffield during

the last three or four seasons. I have observed it on several occasions in flight, have seen it resting on the ground, have beaten it from oaks, but especially noted numbers resting on some iron railings in one of the woods just within the Derbyshire boundary. In this last situation I have repeatedly seen them feeding voraciously on caterpillars, which had descended from the trees immediately above. My dates range from May 1st to the middle of June.—J. M. BROWN, 176 Carter Knowle Road, Sheffield: *July 21st*, 1921.

Acronycta menyanthidis double-brooded.—As a sequel to my note on the very early appearance of *Acronycta menyanthidis* (Ent. Mo. Mag., July 1921, p. 155), I have to record that a second brood appeared on our moors during August—an occurrence which I have never known before with this species, nor do I know of any record of such. Among second-brood specimens taken by Mr. B. Morley was an exceedingly fine melanic example, a form of which I know of only one previous occurrence in this district, though at Strensall, near York, and at Skipwith Common, near Selby, it is the prevailing form. This is one of the curious anomalies in Yorkshire melanism, because in the two districts mentioned there is little other melanism, whereas the localities for the species here are in the "thick" of the melanic area, and yet practically all our *menyanthidis* are pale. I quite expected to see a second brood of *Hadena glauca* also, as it was out about the same early date in spring as was *menyanthidis*, but I have not seen or heard of any evidence of it. The moth of the year in South-west Yorkshire has been *Tryphaena promuba*. Always very abundant of course, it has this season occurred in prodigious numbers apparently everywhere.—GEO. T. PORRITT, Dalton, Huddersfield: *September 5th*, 1921.

Gryllus domesticus outside houses.—Following Mr. Porritt's note (*antea*, p. 185), it may be interesting to note that in 1911 several of the roads here were favoured by the above species "nesting" between the kerbstones, and I have come across two cases this year, one being opposite this house. There is a confectioner's bakehouse down the road where the cheerful chirping of *Gryllus* is in evidence all the year round in any weather, but the present year and 1911 are the only ones since 1904 in which I have noticed them in the open here.—C. NICHOLSON, 35 The Avenue, Hale End, E. 4.

Abundance of Wasps.—The social wasps are very abundant about Hale End, nearly 400 nests having been destroyed this year to date on the Copped Hall estate (4500 acres) near Epping.—C. NICHOLSON.

Ripersia europaea Newst. as a British species.—Mr. Green, in his interesting observations on British *Coccidae*, when recording the capture of *Ripersia europaea* at Minehead in nests of *Acanthomyops* (*Donisthorpea*) *niger* (*antea*, p. 191), writes:—"Although no record of this species as a British insect has appeared in print, I understand from Prof. Newstead that it has been taken in this country on several occasions by Mr. Tomlin and Mr. Donisthorpe." In this, however, he is mistaken. Tomlin recorded it in abundance from nests of *Formica fusca* on the cliffs at Swanage in September 1904 [Ent. Mo. Mag. xl, p. 282 (1904)]; and Donisthorpe in numbers in a nest of

A. (D.) niger at Stepper Point, N. Cornwall, in July 1920 [Ent. Rec. xliii, p. 24 (1921)].—HORACE ST. J. DONISTHORPE, 19 Hazlewell Road, Putney Hill, S.W. 15: August 10th, 1921.

Orycera dives Lw. ♀ at Pitlochry.—On July 7th of this year I had the pleasure of taking a ♀ of this very rare fly at Pitlochry (Perthshire), on the hills lying between that town and Ben-y-Vrackie—the local “Ben” which rises 2757 feet above the level of the sea. I found the fly about 1000 feet up. When Mr. Verrall wrote vol. v. of ‘British Flies’ he knew of only one ♀ specimen—an old one in the Entomological Club Collection, without history, but presumably British; so that the present note gives the first undoubted record of that sex for Britain. It also adds a new locality for the species. As mentioned by Mr. Verrall I took 3 ♂♂ at Aberfoyle in 1903. In the Ent. Mo. Mag. for 1919, p. 233, I have recorded another ♂ from the same place, taken on June 21st of that year. The five specimens I have taken occurred resting on bracken (*Pteris*), on which their bright black and yellow colour makes them conspicuous. At Aberfoyle the bracken grew near a stream, and at Pitlochry there was a good deal of marshy ground quite near, on which grew *Drosera*, *Pinguicula*, *Saxifraga*, etc. Sweeping and searching assiduously over this ground and the bracken failed to yield another specimen. I have looked for the insect in all likely spots during the past eighteen years, and my total of 4 ♂♂ and 1 ♀ show how scarce it must be. The present specimen (in beautiful condition) agrees with the description in ‘British Flies,’ but *all* the markings are bright yellow: Mr. Verrall described some of them in the ♀ as “orange,” due no doubt to the age of the only specimen he had before him.—A. E. J. CARTER, Monifieth, Forfarshire: August 1921.

Diptera from the Pitlochry district of Perthshire.—While searching for *O. dives* I was fortunate to take a ♀ of *Orycera pardalina* Mg., another rare species—at least in Scotland, from whence it has been recorded only from Murrock Glen (Ent. Mo. Mag. 1909, p. 41), also a dark ♀ *Odontomyia viridula* F.; both insects came off the bracken. Another scarce fly turned up in *Hilara matrona* Hal., both sexes of which were found in considerable numbers flying over water; with it were *Tachytrechus notatus* Stan. and *Dolichopus longitarsis* Stan., the latter only twice previously recorded from Scotland. My first capture of the ♂ of *Atherix ibis* F. was made near the Tummel Falls. In woods *Linnophora brunneisquama* Zett. and *Hydrotaea similis* Mde. were both fairly abundant, while on the hills *Tabanus sudeticus* Zlr. was seen several times and two ♀♀ taken. I was glad to find *Rhamphomyia conformis* Kow., a species I had not taken before, and apparently unrecorded from Scotland. A pair in cop. had a small *Ceratopogon* as prey. Two unrecorded additions to the Perthshire list turned up in *Elgiva dorsalis* F. and *Phaeomyia fuscipennis* Mg., although both species have occurred to me in the County before. In several places *Simulium reptans* L. swarmed about one's head and face, but I could not make out that they bit me; but a minute *Ceratopogon* (*sensu lat.*) did so most viciously. *Scatophaga ordinata* Beck., *Chilosia nigripes* Mg. (= *antiqua* Mg.), *C. proxima* Zett., *Hyetodesia longipes* Zett., *Linnophora contractifrons* Zett., and *Rhamphomyia nigripennis* F., were all more or less common and generally distributed. *Volucella bombylans* L., var. *plumata*,

was rather abundant in Glen Fender, but I saw it nowhere else.--A. E. J. CARTER: *August 1921.*

Tanessa antiopa in *Sussex*.—An hour or two before leaving home on the evening of August 20th I had the good fortune to capture a very fine specimen of the above in my kitchen-garden. It had been first noticed by my head gardener, who had seen it two or three times before he told me that there was "a large, nearly black butterfly in the garden, that had a white edge all round." I went to the house for net and box, and, after about forty minutes' wait, it returned to the original spot, and after one unsuccessful attempt to net the insect I finally caught it after it had alighted on an apple-tree. The specimen is in far finer condition than any of the other British specimens in my cabinet. I think it must have been bred in this country, perhaps from a hibernated female blown or flown from the Continent in the spring.—FREDERICK J. HANBURY, Brockenhurst, East Grinstead: *September 1921.*

Obituary.

John Gardner.—The death of Mr. John Gardner, F.E.S., at his residence, Hart, near Hartlepool, on July 21st, in his 80th year, has removed from amongst us a veteran British entomologist. Born at Egglestone in Upper Teesdale on December 29th, 1841, Mr. Gardner came to Hartlepool in early life, subsequently entering business as a timber merchant. From this occupation he retired some fifteen years ago and went to reside at Hart, where his love of gardening afforded him pleasing recreation during the latter portion of his life. He took an active interest in the public affairs of Hartlepool, being at one time a member of the Town Council and the local Education Authority. Fond of Natural History from boyhood, Gardner early began the study of our native *Lepidoptera*, contributing notes on rare and local species through a long series of years to the principal entomological journals. He also rendered much assistance to the late William Buckler, when that entomologist was engaged in his work on the larvae of British *Lepidoptera*. In this connection it is of interest to quote Buckler's own words respecting only one insect—perhaps his best discovery. "With much gratification I am able to record the interesting discovery of the larva of *Miana expolita* and its food-plant; a puzzle that has hitherto baffled all attempts at solution has at length been unravelled by the assiduous efforts of Mr. J. Gardner of Hartlepool." The larvae of *Halonota turbidana* and *Lithocolletis insignitella* were also amongst his great "finds"; the latter species he took freely on clover near Hartlepool, its only British locality. When the late John E. Robson was conducting 'The British Naturalist,' which flourished thirty years ago, Gardner was one of the sub-editors who assisted him in its production. His work in this order of insects culminated in the task of editing the concluding portion of Mr. Robson's "Catalogue of the *Lepidoptera* of Northumberland and Durham." At the time of Robson's death in 1907 this valuable catalogue remained unfinished, and to this work Gardner devoted himself with characteristic energy until the end of 1912 saw the completion of his labours. Anyone looking through this List will obtain a good idea of his zeal as a collector, and the success with which he worked at the life-history of many rare and local species. Amongst the *Microlepidoptera* especially was this the case, this portion of the catalogue

having to be largely re-written from material afforded by his own painstaking observations and those of his friend John Sang.

In 1884 Gardner turned his attention to the *Coleoptera*, and so assiduously did he investigate the coast-line and inland localities of his own neighbourhood that he discovered a large number of rare and interesting beetles as additions to those enumerated by Bold in his "Catalogue of Northumberland and Durham Coleoptera," published in 1871-2. The beetle-fauna of the Hartlepool and Upper Tees Valley districts was hardly known, and he was able to record additional localities for many of the rarer insects mentioned in Bold's List. A full account of these will be found incorporated in Mr. R. S. Bagnall's Notes on local *Coleoptera*, read before the Newcastle Natural History Society and published in their Transactions.

Mr. Gardner was elected a Fellow of the Entomological Society of London in 1890, and was a member of the "Coleoptera Committee" in connection with the Yorkshire Naturalists' Union. Modest and unassuming to a degree, he did not parade his store of knowledge, and wrote much less than he might have done in the entomological literature of his day. But by his generosity our collections have been enriched, whilst to the young student he was a most helpful companion, and, as the writer of this notice can testify, delighted to impart information on field-work and the methods of observation he had himself acquired only after patient work and long experience.

The collections of British Lepidoptera and Coleoptera formed by Mr. Gardner were presented by him to the Newcastle-on-Tyne Museum, where they remain a fitting memorial to his life-work.

He was buried in Hart cemetery on July 23rd, and the funeral was attended by a large circle of friends and colleagues, who held him in high esteem and affection during a long life-time, and for whose widow much sympathy was felt in her bereavement.—M. L. T.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
July 14th, 1921.—Mr. K. G. BLAIR, B.Sc., F.E.S., President, in the Chair.

Mr. G. S. Baker, of W. Brompton, was elected a member.

There was a short discussion on *Xanthorhœ* (*Cidaria*) *rivata* and *X. (C.) alternata* (*sociata*), introduced by Mr. Hy. J. Turner, who dealt at length with the nomenclature and differentiation and briefly with the variation. Mr. A. W. Buckstone exhibited series from several localities and referred to a later and darker form of *X. alternata* (*sociata*). Mr. Mera, series of both species and referred to the variation occurring in Britain, dealing especially with the I. of Lewis dark race of the latter species. Mr. Enefer read a note on his exhibit of *Hylobius abietis*, a beetle recently becoming abundant in the S. of England. Mr. H. Moore, an ant-lion he had bred from the larva given him by Mr. Main, from S. France, and also an aberration of *Anosia benenice* from Florida. Mr. Priske, the winged form of the water Hemipteron *Velia currens*. Mr. Blair, the fire-fly *Phengodes laticollis* from Washington, and read notes on its life-history. Mr. Turner, further species of Lepidoptera from California sent to him by Mr. G. B. Pearson.

July 28th, 1921.—The President in the Chair.

Mr. Edwards exhibited various insects taken by him at Digne in April 1897. Mr. Main, an example of the 2nd ecdysis form of *Gryllus campestris*; puparia of the Tsetse-fly from S. Africa; ova of the "Katydid" Locust of N. America; and a young trap-door spider, *Atypus affinis*, from Epping Forest. Mr. Ashby, the *Coccinellidae* from the collection of the late Mr. Ashdown, 2220 specimens. Mr. Goodman, a nest of the wasp *Polistes gallicus* and a larva of *Hyles euphorbiae* from the Dauphiné. Mr. Farmer said that it was reported that a specimen of the "Large Copper" had been taken at Limsfield, and Mr. Edwards suggested that it was possibly an escape from Capt. Purefoy's rearing experiments in Kent.

August 11th, 1921.—The President in the Chair.

Mr. Edwards exhibited apples infested with the apple-scale *Mytilaspis pomorum*. Mr. Hy. J. Turner, a chrysalis of *Pyrameis atalanta* from Bettws-y-Coed, N. Wales. Mr. Blenkarn, *Melanophila acuminata* from Crowthorne taken from actually burning pine-stumps, *Lebia cyanocephala* from Box Hill, *Cassida fastuosa* found on *Senecio jacobaea* at Box Hill, *Dianous coerulescens* from the Mole near Box Hill, *Liparus germanus* taken on hogweed in Kent, *Aromia moschata* found in London, *Bythinus glabratus* from a nest of *Lasius flavus* at Box Hill, etc. Mr. Ashby, *Stenopus fagi* and *Asthena blomeri* taken at the Chalfont Field-meeting. Mr. T. H. Grosvenor, six distinct shades of blue in *Agriades thetis*, including a unique specimen with scattered black scales, and a very pronounced ♀ ab. *ceronus*. Mr. K. G. Blair, a living bred *Papilio podalirius* from S. France and a *Gryllus bipunctatus* taken in the London Docks. Mr. Withycombe, stereoscopic slides of ova of a Hemipteron and of the Tineid *Harpiteryx xylostella*. Mr. Tonge, a presumably third-brood specimen of *Pararge aegeria* bred from a female captured at Chalfont on June 25th. Mr. Goodman, two distinct races of *Erebia tyndarus* from La Grave and the Engadine.

THE BRITISH SPECIES OF THE ANTHOMYID GENUS
LIMNOPHORA DESV. (DIPTERA).

BY J. E. COLLIN, F.E.S.

(Continued from *antea*, p. 175.)

Tables of the Species
based upon characters exhibited in the males, to be followed by
a separate Table of the females (continued).

Subgenus VILLENEUVIA.

Only one known species 17. *aestuum* Villen.

♂. Frons more than $\frac{1}{4}$ the width of head, frontal orbits narrow and consequently frontalia wide; this latter is somewhat ribbed longitudinally and varies in colour according to the point of view (sometimes appearing dusted), but when viewed from in front it is black with the only slightly produced ocellar triangle greyish-white. The shape of the head in profile, with its very wide jowls, very short face with the vibrissal angles well above the front

mouth-edge, very short antennae and arista, is very distinctive. Thorax grey, brownish on the disc—the darkening varying according to the point of view, but usually showing indications of three stripes down the lines of bristles. Abdomen viewed right from behind grey with most of the first segment darkened, two narrowly separated quadrate (longer than wide) dark patches on second segment and two very much smaller, narrower, and more widely separated dark patches on third segment. In some lights this coloration may be reversed, the abdomen appearing dark with the dark patches mentioned above greyish or light brownish. Hypopygium beneath (on the part which bears the anal opening) with two tufts of hairs directed downwards and somewhat towards each other. Legs black, dusted greyish, with the extreme knee-joints reddish. Hind femora with an anteroventral row of bristles, short and fine on basal third, becoming much longer towards tip; posteroventrally with 2-3 distinct long bristly hairs on basal half. Front tibiae with 1-2 bristles behind near middle; middle tibiae with about 3 bristles behind on middle third; hind tibiae with 3-4 anteroventral bristles on apical half and two anterodorsal on middle third. Claws and pulvilli short. Wings almost clear. Squamae whitish. Halteres yellow.

♀. Greyer than the male. Frons more than $\frac{1}{3}$ the width of head. Interfrontalia produced about $\frac{2}{3}$ the distance from front ocellus to front of frons. Thorax grey with three narrow more or less distinct brown stripes down the lines of bristles. Abdomen grey except for similar, though smaller, and less quadrate, light brown patches, on second and third segments; these patches appearing the same from all points of view. Chaetotaxy of legs very much as in male (including long posteroventral hairs on hind femora about base), but there is often a small bristle in front of middle tibiae and a small posterodorsal bristle near middle of hind tibiae.

Length 6-7 mm.

This species cannot be confounded with any other in Britain. It is a sea-coast species which has occurred to Mr. Verrall at Aberlady (Haddington), Dyffryn (Merioneth), and Fawley (Hants), to Col. Yerbury at Findhorn (Elgin) and Studland (Dorset), and to Miss W. E. Breuchley and myself at Blakeney Point (Norfolk). It may be found during June, July, and August. Mr. H. W. Andrews has taken it at Porthcawl (Glamorgan) and in Ireland.

Subgenus GYMNOTIA.

Only one British species . . . 18. *humilis* Zett.

(*septemnotata* Auct. nec Zett.).

♂. Easily distinguished by the exceedingly narrow, and largely bare, frons. In profile the eyes occupy almost the whole of the head leaving the narrow jowls visible, but the very convex frons is only just visible and the very narrow facial orbits almost completely hidden. Arista microscopically pubescent. Thorax distinctly brownish, dull, and practically without stripes. Acrostichals

irregularly quadriserial, the outer pairs stronger than the inner pairs and the thorax devoid of any pubescence between these outer rows and the dorsocentrals. Abdomen all dark when viewed in some lights from above, but when the light comes from behind the insect and the abdomen is viewed right from behind, the usual somewhat triangular, narrowly separated dark patches are plainly visible on the 2nd-4th segments—largest on the second and very small on the 4th segment; first segment nearly all darkened. Legs slender and very sparsely bristled; front tibiae bare behind; middle tibiae with one small bristle behind; hind tibiae with one small anteroventral and one small anterodorsal bristle a little above it; only one small preapical bristle; hind femora with 2-3 anteroventral bristles towards tip. Wings faintly brownish and rather pointed, radial vein long, ending in costa practically equidistant from wing-tip with the discal. Squamae usually brownish. Halteres yellow.

♀. Head in profile with eyes not so large as in male, but similar in outline. Interfrontalia produced forwards almost to front of frons. Thorax dark greyish with three faint brownish stripes down the lines of bristles. Abdomen similar to thorax in colour, the faint brownish patches as large as in male. Bristles of legs as in male. Wings clearer and not quite so pointed. Squamae paler.

Length 4-4.5 mm.

This species is not at all uncommon and is one which hibernates in houses, numerous females with a few males may often be found on windows in the late autumn. In the open the species is more usually found during August.

It has not previously been associated with *L. polystigma* in the subgenus *Gymnodia*, but it agrees so remarkably in many characters with that species that it must surely belong to the same group. Dr. Eltringham bred this fly from horse-manure in the course of some experiments on the House-fly in relation to the farm manure-heap (Journ. Agric. Sc. vii. 1916, p. 452). A heap was made on August 24th of horse-manure from a stud stable, and on August 30th this was completely enclosed with a tent-like cover of cheese-cloth. By September 10th 37 specimens of *L. humilis* and 12 *Musca domestica* had appeared from the heap. *L. humilis* has previously been known under the name of *septemnotata*, but Ringdahl has found that the true *septemnotata* of Zett. is quite a different species.

Subgenus NEOLIMNOPHORA.

- 1 (2) Presutural acrostichals tri- to quadri-serial and without distinct stronger pairs. A narrow black frontalia obvious in both sexes (in ♀ divided by the interfrontalia). Abdominal dark patches faint, but distinctly visible in ♂ when viewed from behind

.... 19. *maritima* v. Röd
candicans Villen.

♂. A grey species, but never so silvery-grey as, and always slightly larger than, *virgo*. Head rather longer (especially on the lower part) in proportion to depth. A distinct "keel" between the

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

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THE MUSEUM, HULL;

AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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The Annual Subscription for 1921 is 15/-.

Third Series, No. 83.]
[No. 690.]

NOVEMBER, 1921. [PRICE 2/- NET.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

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THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.) Forthcoming meetings of the Society are—Nov. 1st: Sectional meetings, Plant Galls on Rosaceae, and Lepidoptera (The Clearwings, etc.); Nov. 22nd: Ordinary meeting, "Bird Protection," by J. R. B. Masefield, M.A.; Dec. 6th: Annual General Meeting; Dec. 20th: Sectional meetings, Ornithology, Lepidoptera (The Emeralds, etc.), and Archaeology.

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

bases of antennae, and the antennae (though still short) longer in proportion to their width. Thorax viewed from in front unicolorous grey, sometimes with a brownish tinge down the lines of acrostichal and dorsocentral bristles; viewed from behind this brownish tinge (if present) disappears, while a narrow light slatey-grey stripe becomes visible on each side of the presutural acrostichals, and a broad postsutural slatey-grey stripe at each side above wing-base. Abdomen viewed from behind with quite distinct, narrowly triangular, brown patches on second and third segments; though when viewed from in front these patches can hardly be traced. Legs with slightly stronger bristles and hind femora with 3-4 strong antero-ventral bristles towards tip (whereas in *virgo* there are only two); there are also a few distinct posteroventral bristly hairs about base of hind femora, which are absent in *virgo*. Wings not so milk-white, the veins darker and the cross-veins somewhat closer together.

♀. More unicolorous than in male and more yellowish-grey than in *virgo*. The slatey-grey thoracic stripes are less distinct than in male and the abdomen is unicolorous yellowish-grey. Structure of head as in male except for the broader frons, with its long interfrontalia (decidedly narrower than in *virgo*) reaching to front of frons and leaving the black frontalia as two long very narrow triangles with their points ending opposite the front ocellus. Chaetotaxy of legs as in male and with at least one distinct bristly hair at base of hind femora beneath.

Length 6.65 mm.

This species is undoubtedly quite distinct from *virgo*, though there has been some confusion in the identification of the two species. All previous records of *maritima* as British—including the mention by Stein (1916) of specimens from Walton and Studland—refer to *virgo*. True *maritima* was unknown as British until I found it in some numbers (though only three were males) at Blakeney Point (Norfolk) at the end of July 1920. It was sitting in the sun on the sandy mud left damp by the retreating tide.

- 2 (1) Presutural acrostichals bi- to tri-serial, with 2-3 distinct stronger pairs. Frontalia practically indistinguishable in male, and reduced to a line each side of the very broad and long interfrontalia in female. Abdominal dark patches practically indistinguishable

.... *20. *virgo* Villen.

♂ ♀. Most of the distinctive characters of this species will be found mentioned in the description of *maritima*. The antennae are closer together at the base with no distinct "keel" between them. In the single male examined the evanescent thoracic stripes differ from those of *maritima*. Viewed from above with the light from above the thorax is very faintly four-striped, the middle pair occupying the whole space between acrostichals and dorsocentrals, but are not so wide as the side-stripes; a broad patch across the hinder part of thorax appears darker grey than the stripes; when viewed right from behind this dark patch appears silvery-grey and

the middle pair of stripes more or less confluent forming one broad stripe. The abdomen of the male viewed right from behind shows a large, slightly darker grey, area about middle of second segment and a pair of very indistinct and very small patches of similar colour on third segment. The female is much more unicolorous, even on thorax, than the male.

Length 4.5-5.5 mm.

Both Col. Yerbury and I have taken this species at Walton-on-Naze (Essex); in addition Col. Yerbury has found it at Studland (Dorset), and I have taken a single female at Blakeney Point (Norfolk). All the specimens (1 ♂, 6 ♀♀) were caught in July and August by sweeping the marram-grass growing on the sand-hills.

Subgenus PSEUDOLIMNOPHORA.

- 1 (2) Three pairs of postsutural dorsocentral bristles. Middle tibiae with only one posterodorsal bristle. Frons viewed from in front with a brownish or brownish-grey sheen

.... 21. *triangula* Fln.

♂. Frontalia wide and almost parallel-sided; frontal orbits and interfrontalia with a brownish tinge. Arista rather distinctly but not very densely pubescent. Thorax brownish-black with humeri and notopleural depression light grey; hardly striped, though faint greyish stripes may be traced right in front between acrostichals and dorsocentral rows of bristles and there is a tendency for the dark colour to split up into three stripes behind. First abdominal segment largely dark except on hind margin towards side; second and third segments each with a pair of triangular brownish-black patches occupying the whole length of segment and spreading out on the hind margin almost to the sides; fourth segment darkened about middle. Cubital and discal veins slightly convergent towards tip.

♀. Very similar to the male, but thorax often much more conspicuously three-striped. The frons has, as in the male, a brownish-grey and not a silvery-grey appearance when viewed from in front.

Length about 3 mm. ♂; 4 mm. ♀.

This species can be confused with only *nigripes* so far as the British species are concerned. There is another closely allied Continental species (*pollinifrons* Stein) with only three pairs of postsutural dorsocentrals which may some day be found in Britain. It appears to differ from *triangula* in having the frons with a silvery sheen when viewed right from in front, and the frontal orbits narrowing remarkably towards behind and disappearing before reaching the vertex, while the hind femora have no anteroventral bristles towards tip. *Limnospila albifrons* Zett. is another species which superficially much resembles *triangula* and *nigripes*, but is primarily distinguished by having the three sternopleural bristles arranged in an equilateral triangle, a character which places it in the Coenosinae. It resembles *triangula* in having only three

postsutural dorsocentrals, but has a very silvery frons (more so than in *nigripes*): the acrostichal bristles are rather stronger, biserial, and less numerous, and the abdominal dark patches smaller and usually with a faint dark median line between them; there are more than two bristles on the shaft of hind tibiae, and the prosternum and nodose junction of radial and cubital veins are bare. It stood in Kowarz's Collection under the name of *Coenosia pacifica*, Schin.

L. triangula is widely distributed in Britain, specimens having been examined from Kent, Devon, Glamorgan, Worcester, Essex, Suffolk, and the Isle of Arran taken in May, June, and August, while Mr. H. W. Andrews has taken it freely in Co. Kerry (Ireland).

- 2 (1) Four pairs of postsutural dorsocentral bristles. Middle tibiae with two posterodorsal bristles. Frons viewed from in front with a silvery-grey sheen *22. *nigripes* Dsv.

♂. Frons slightly wider than in *triangula* and the frontalia with more distinctly convex sides; frontal orbits greyer. Thorax often more distinctly striped. Bristles in front of middle femora on basal half more distinct. Cubital and discal veins more parallel towards tip.

♀. Agreeing with the male, but larger. The frons in the single Continental specimen examined is not so distinctly silvery-grey viewed from in front, but at least the interfrontalia is greyish.

Length about 3 mm. ♂; 4.5 mm. ♀.

This is a more northern species of which Mr. Verrall took several males at Gairloch (Ross and Cromarty) in June 1884, and Col. Yerbury two males at Aviemore (Inverness) in June 1913.

Subgenus LIMNOPHORA.

- 1 (2) Thorax with two broad dark stripes in front followed (in the female) by a broad dark transverse band immediately behind suture. Arista subplumose 23. *notata* Fln.

♂. Frons about twice as wide as third antennal joint; frontal orbits narrow. Thorax with four pairs of postsutural dorsocentrals, and the dark transverse band connected by a median dark line to the broadly darkened base of scutellum. Abdomen with the dark patches on the second segment triangular but with rounded angles and not very broad, those on third segment smaller and more rounded. The last ventral segment bears on the middle of the hind margin (where the segment is deeply excised) a short transverse row of black bristles. Hind femora with only 2-3 antero-ventral bristles towards tip and short-haired posteroventrally. Wings only faintly brownish. Squamae whitish-yellow. Halteres yellow.

♀. Frons a third the width of head and widening out in front. Thorax with the postsutural dark band of the male split up into two broad stripes in a line with the presutural stripes, and with a very small triangular dark mark in front of scutellum. Scutellum

much less extensively darkened at base. Abdomen broad, with small rounded brownish patches on the first three segments (smallest on the first and largest on the second). Legs, etc., as in the male.

Length about 5 mm. (females sometimes 6 mm.).

This species appears to be a marsh-loving species which has occurred sparingly at Martham and Ormesby (Norfolk) to Mr. Verrall, in the New Forest (Hants) to Dr. D. Sharp and F. C. Adams, and at Walton-on-Naze (Essex) to Col. C. G. Nurse. Mr. H. W. Andrews, however, has taken the species in some numbers in the Thames Marshes (Kent) from May to September.

- 2 (1) Thorax with three dark stripes in front, the middle one being narrow in front of suture but broadening out and often confluent with side-stripes just behind suture. Arista at most only pubescent.
- 3 (6) Scutellum greyish at least on disc.
- 4 (5) Darker species with thoracic side-stripes broad. Normally only three pairs of postsutural dorsocentrals. Scutellum with dark basal side-patches. Hind femora short-haired posteroventrally

.... 24. *maculosa* Mg.

♂. Frons a little wider than in *notata*, and the frontal orbits, though narrower than frontalia, are wider than in *notata*. Arista distinctly pubescent. Thoracic markings not so dark and of a brownish colour; a broad presutural patch on each side and a narrow central stripe which widens out behind the suture and coalesces with the side-stripes for some considerable distance; a smaller dark patch above the root of each wing. Abdomen viewed from behind with the dark markings on first segment separated by a grey central stripe and leaving the hind margin broadly greyish at sides; those on the second and third segments usually occupying the full length of each segment, narrow at base but as wide as long on hind margin; those on third segment smaller; fourth segment often with a faint brownish middle line. Hypopygium brownish. Middle tibiae with two bristles behind. Hind tibiae occasionally with the usual single anteroventral and anterodorsal bristle duplicated. Squamae whitish. Halteres yellow.

♀. Resembling the male, but frons broad. Abdominal dark patches sharply marked and extending broadly along the hind margin of second and third segments, in that respect more resembling *exsurda* and *miseta* than the other species of this group, but the arista is more distinctly pubescent than in these two species, and there are normally only three pairs of postsutural dorsocentrals, while in *exsurda* the ground-colour of thorax is more bluish-grey, and in *miseta* the thorax more suffused with brown and the stripes less distinct.

Length 5-6.5 mm.

This species is more widely distributed than *notata*. Specimens have been examined from the New Forest (Hants), Dawlish, Slapton, and Ivybridge (Devon), Porthcawl (Glamorgan), Barmouth (Merioneth), Oxtou Bogs (Nottingham), Loch Maree (Ross and Cromarty), Lairg and Tongue (Sutherland), captured by Mr. Verrall,

Col. Yerbury, Dr. Sharp, Mr. C. G. Lamb, and Prof. J. W. Carr, while Mr. H. W. Andrews has taken it in Ireland.

- 5 (4) Greyer species with thoracic side-stripes limited to a small patch in front and a narrow streak behind the suture. Normally four pairs of postsutural dorsocentrals . . 25. *scrupulosa* Zett.

♂. Frons about as wide as in *maculosa*, but the frontalia rather narrower and orbits wider and very silvery. Vertex and a triangular patch on occiput behind the ocellar triangle light greyish. Thorax very distinctive by reason of the much reduced side-stripes; median stripe widening out (but not to dorsocentral rows) behind suture, then narrowing again to scutellum. Presutural acrostichals not more than biserial. Four pairs of postsutural dorsocentrals. Abdomen with much restricted dark patches on first segment, a pair of small triangular patches on second segment, and a pair of smaller more transverse patches on third segment. Hypopygium grey. Middle femora with about four long bristles beneath towards base; middle tibiae usually with two small bristles behind. Hind femora with the anteroventral bristles more numerous and sometimes more extended towards base, and with the posteroventral hairs on basal half certainly longer, than in *maculosa*. Wings as in all species of this group only faintly tinged with brown. Squamae whitish. Halteres yellow.

♀. Frons wide. Vertex, as in the male, distinctly grey. Thoracic stripes (especially the side-stripes) somewhat variable. The best distinguishing character lies in the comparatively small brown abdominal spots which lie on the hind margin of second and third segments, and the absence (or very faint indication) of spots on the first segment. The anteroventral bristles on hind femora are rarely present on more than the apical half, and there are no conspicuous posteroventral hairs.

Length 4.5-5 mm.

This species can be recorded with certainty from only seven specimens, four taken by Col. Yerbury—1 ♂, 2 ♀ ♀ at Porthcawl (Glamorgan) on July 18th, 1906, and a ♀ at Pyle (Glamorgan) on August 10th, 1908, and three by Mr. H. W. Andrews (2 ♂ ♂, 1 ♀ at Porthcawl, June 28th and 30th, 1913). The specimens upon which Meade introduced the name to the British List were (according to some notes made by Mr. Verrall on one of Meade's specimens) only females of *Limnophora humilis* (*septemnotata* Auct.). I have examined Zetterstedt's type in the Copenhagen Museum, and agree with Ringdahl that Stein's *variabilis* (at least the grey form) is a synonym.

- 6 (3) Scutellum uniformly brownish-black.

- 7 (8) Dark markings on thorax distinctly divided up into stripes behind. Hind femora with rather fine anteroventral bristles on apical half and some long fine posteroventral hairs on basal half

.... *26. *exsurda* Pand.

♂. Frons at narrowest part rather wider than 3rd antennal joint with the orbits much narrower than the frontalia. Vertex not greyish. Arista microscopically pubescent. Thorax slaty-grey,

but broadly three-striped with brownish-black, the narrow central stripe broadening out for some distance immediately behind suture so as to coalesce with the broad side-stripes, these latter being connected at the side with a dark patch above each wing-base. Abdomen grey with almost equally large broadly triangular dark patches on second and third segments. First segment darkened about the base but greyish about the middle and broadly at sides behind; fourth segment brownish on a central stripe and towards behind; the partly concealed 5th segment also brownish. Middle femora with finer bristles beneath about base than in allied species; middle tibiae usually with only one bristle behind. Wings with a few tiny bristles on cubital vein for not more than one-third of the distance from base to discal cross-vein (in allied British species these bristles are confined to the nodose junction of radial and cubital veins). Squamae whitish. Halteres yellow.

♀. Differing from the male in having usually much narrower thoracic stripes. The middle stripe rarely coalescing with the side-stripes and these latter shorter and usually much narrower. Scutellum grey with a brown patch at each basal corner. Abdomen with large brown, slightly shining patches on second and third segments, extending broadly along the hind margin towards sides; first segment at most with a pair of only very small faint brownish patches opposite the basal end of each patch on second segment; fourth segment often with a brownish median line. Middle femora with shorter finer bristly hairs about base beneath; hind femora with only 2-3 anteroventral bristles towards tip and short-haired posteroventrally.

Length 4-5 mm.

This appears to be a more southern species, which I found at Swanage (Dorset) in August 1906; Col. Yerbury at Torcross (Devon), Llangammarch (Brecknock), Port Wrinkle (Devon), and Lelant (Cornwall) in August and September; Dr. J. H. Wood at Olchon Tarn (Hereford) in September; Mr. H. W. Andrews at Milford Haven (Pembroke) and in Ireland in June, July, and August; and Mr. C. G. Lamb at Padstow (Cornwall) in July. Mr. A. E. J. Carter, however, has taken the species as far north as Aberfoyle (Perth) in September.

- 8 (7) Thorax entirely brownish-black behind and only indistinctly striped in front. Hind femora with stouter anteroventral bristles and no long posteroventral hairs. *27. *wiseta* Stein.

♂. Frons at narrowest part rather wider than 3rd antennal joint; orbits narrower than frontalia. Thorax much darker than in any of the allied species, being grey only on front margin, humeri, and notopleural depression, though the dark part in front of suture may be more or less distinctly split up into stripes. Abdomen with first segment extensively darkened: second and third segments with large broad subquadrate dark patches; and fourth segment with indications of a dark central stripe and hind margin; the visible part of fifth segment also brownish. Legs with strong bristles beneath base of middle femora; middle tibiae usually with two

bristles behind; hind femora with 4-5 stoutish anteroventral bristles on apical half but comparatively short-haired posteroventrally. Wings rather more tinged with brown than in allied species. Squamae whitish-yellow. Halteres yellow.

♀. Thorax lighter brown than in male, but still most inconspicuously striped compared with allied species. In front of suture the narrow median and broad side stripes can be traced, while in addition two narrow brownish-grey stripes are present right on the front of thorax and continued between the acrostichal and dorsocentral rows of bristles faintly to suture. Abdominal brownish patches large but not very sharply differentiated from the ground-colour; those on second segment the longest and broadly extended along the hind margin towards sides. Legs as in the male, but hind femora quite short-haired posteroventrally.

Length 5 mm.

This species is known to me as British from a single male only, taken by Col. Yerbury at Aviemore (Inverness) on June 15th, 1913, but I possess a pair of Swedish specimens through the generosity of my friend Herr O. Ringdahl of Halsingborg.

Subgenus CALLIOPHRYS.

- 1 (2) Face narrower and vibrissal angles silvery like the face. Frons not wider at base of antennae than at vertex, and when viewed from in front with at least half the width about middle with a light brownish- or yellowish-grey sheen

.... 28. *exuta* Kow.

♂. The greyish sheen on frons is much less conspicuous than in *riparia* and only visible when viewed right from in front. Interfrontalia not so sharply differentiated. Eyes rather larger. Face not so sharply produced at mouth edge. Antennae narrower. The narrower face is chiefly due to the facialia being noticeably narrower than in *riparia*. Thorax more uniformly brownish without indications of the grey lines between acrostichals and dorsocentral usually present in *riparia*. Three or four pairs of postsutural dorsocentral bristles. The species in other respects much resembles *riparia*.

♀. Very much like the male. Thorax occasionally with indications of narrow grey stripes. Abdominal patches rather more shining than in the male.

Length 4-5 mm.

This species has been found by Mr. Verrall at Dawlish (Devon) and Dovedale (Derby) in June, at Windermere (Westmorland) in July and at Mildenhall (Suffolk) in September. Col. Yerbury has caught it at Barmouth (Merioneth) in July and as far north as Loch Assynt (Sutherland) in June.

- 2 (1) Face wider and vibrissal angles darkened. Frons rather wider at base of antennae than at vertex, and when viewed from in front with only the middle third of frons glossed with a silvery sheen

.... 29. *riparia* Flin.

♂. Frontal orbits and occiput dull brownish-grey. Interfrontalia

very distinct, reaching to front of frons, and even when viewed from above distinctly greyish-white on front part. Frontalia thus split up into two dull black stripes each side of interfrontalia. Face silvery-grey in most lights and strongly produced below. Facialia almost straight on the inner side but strongly convex on the outer, curving round to the darkened vibrissal angle. Antennae with lower apical angle rounded and upper angle pointed. Arista almost bare. Thorax usually with indications of bluish-grey lines down the rows of dorsocentral bristles and with greyish side-margins. Usually four pairs of postsutural dorsocentrals. Scutellum bluish-grey about middle. Abdominal brown patches large, triangular, narrowly separated on a median line and broadly extended to sides on the hind margin; fourth segment with a single larger or smaller triangular brown patch at the middle. Legs long and with long and rather slender tarsi. Middle femora with 3-4 fine bristly hairs at base beneath; hind femora with anteroventral bristles on apical half but short-haired posteroventrally. Front tibiae without a bristle behind; middle tibiae with 1-2 small bristles behind; hind tibiae with one anteroventral and one anterodorsal bristle at about middle. Wings only faintly tinged with brown; cubital vein often with a few tiny bristles at base beyond the nodose junction with radial vein, as in *ecurda*. Squamae whitish. Halteres yellow.

♀. Resembling the male, but often somewhat larger. The dull black frontalia wider. Third antennal joint rather narrower. Thorax more distinctly striped. Abdomen more ovate and the large dark patches more shining.

Length 4.5-5.5 mm.

This species is not uncommon. Specimens have been examined from Lewes (Sussex), Darent (Kent), Corfe Castle (Dorset), Kennett (Cambs), Sutton Park (Warwick), Tongue (Sutherland), Thurso (Caithness), and Aberdeen, occurring in the months of May, July, August, and October.

(To be concluded.)

NOTES ON ORIENTAL CARABIDAE.—II.*

BY H. E. ANDREWES, F.E.S.

Some new Species of Bembidium from Java and Indo-China.

In the Malay region the genus *Bembidium* is largely replaced by *Tachys*, and there are, so far as I am aware, no records of its occurrence in this part of the world. Among the numerous Malay islands I have seen specimens from Java only. In the British Museum collection there is an example of *B. opulentum* Nietn. (which I identify with *europæ*

* Part I was issued in the last volume of this Magazine, pp. 235-249.

Bates and *riverinae* Sl.) taken by Dr. C. W. Andrews at Batavia "under electric light in veranda," and I have seen others from Semarang* (*Drescher*) in the collection of the Brussels Museum. The only other *Bembidium* I have come across from this region was taken by Mr. G. E. Bryant at over 8000 feet, and this I describe further on under the name of *B. bryanti*.

In Indo-China the genus seems to be rather more widely spread, but here again nothing is recorded (except for a brief reference of my own), though I have notes of three described species. These are as follows:—

- (1) *B. niloticum* Dej. TONKIN: Hanoi and Hoabinh. CAMBODIA: Kompong Kedei (all *R. Vitalis de Salvaza*).
- (2) *B. opulentum* Nietn. CAMBODIA (*Brussels Mus.*). SIAM (*British Mus.*).
- (3) *B. xanthacrum* Chaud. (= *xanthotelum* Bates). TONKIN: Hanoi (coll. *E. Fleutiaux*). LAOS: Paklung, Pak Lay, Pak Tha, Pak Leung, Ban Saleun, also "between Vientiane and Luang-Prabang" (*R. Vitalis de Salvaza*). SIAM (*British Mus.*).

To these I am adding descriptions of three new species.

Bembidium (Peryphus) bryanti, sp. nov.

Length 5 mm.; width 1.8 mm.

Black, shining, elytra with a faint suggestion of iridescence; joints 1-2 of antennae, base of joints 3-4, base of palpi, extreme apex of elytra, and legs testaceous, underside more or less piceous.

Head smooth, eyes not prominent, frontal grooves fairly deep, nearly parallel. *Prothorax* cordate, about a third as wide again as long, sides sinuate at basal third, hind angles about right, projecting very slightly laterally, basal foveae deep, bounded outwardly by a strong carina, surface smooth throughout. *Elytra* oval, rather flat, punctate-striate, inner striae deep, with rather fine though clear punctures, 2 but little shallower near apex, outer striae obsolescent towards apex, 7 feebly indicated, apical stria very deeply impressed, intervals moderately convex, 3 with two well-defined punctures, front one rather before middle, hind one a little behind apical third.

Allied to *B. nitidulum* Marsh., but black. Head similar in shape, but with rather shallower frontal grooves; prothorax less transverse, with sides a little more rounded, sinuate further from base, which is impunctate; elytra flatter, without raised suture, striae more finely punctate, apical stria very short, but much more strongly impressed, both the pores on interval 3 placed a little nearer apex.

* This locality turns out to be in Java, not in Borneo, as mentioned by me in a recent paper (Proc. Zool. Soc. Lond. 1921, p. 241).

JAVA: Papandajan, at 8460 ft., in the crater (*G. E. Bryant*), 1 ex., ♀, in my collection.

Bembidium incisum, sp. nov.

Length 4 mm.; width 1.5-1.6 mm.

Aeneous, here and there faintly purple, underside black with greenish reflections: head bright metallic-green on each side between frontal grooves and eyes, buccal organs, palpi, joints 1-4 of antennae, an apical-lateral spot on each elytron, and legs flavous.

Head flat, dull, coarsely shagreened (except at sides), eyes only moderately prominent, frontal grooves reduced to little more than a puncture at each end of clypeal suture, but the bright metallic sides form a ridge on each side, interrupted by front supra-orbital pore, doubled behind and extending to hind-eye level. Prothorax cordate, nearly half as wide again as long, base slightly produced in middle, sides gently rounded and sinuate shortly before the rectangular hind angles, basal foveae fairly deep, bounded outwardly by a very slight carina, apex longitudinally striate, base rather coarsely punctate, surface finely shagreened, but moderately shiny. Elytra short, ovate, shiny, moderately convex, punctate-striate, the striae deep, the punctures rather fine, 1-4 deep to apex, 5-7 very deep at base, faint on apical half, apical stria deep, intervals moderately convex, 7-8 almost carinate close to base, a deep depression on each elytron at basal fourth, covering intervals 2-5, the effect of which is to push the striae a little outwards at this point, interval 3 with a deep rounded pore at middle, which occupies not only the whole interval, but a portion of the two adjacent ones, and a second rather smaller one at apical fourth, the testaceous spot at apical third a little transverse and covering intervals 5-8, a few long setae issuing at sides from marginal pores.

Evidently allied to *B. opulentum* Nietn., but much more roughly sculptured, the coloration brighter, the elytra shiny, the testaceous spot of different shape and at a third from apex. Head narrower, side ridges very shiny, more developed, and doubled behind; prothorax with more gently rounded sides, less contracted behind, striate in front, and with strongly punctured base; elytra very uneven, the striae deeper, strongly depressed at basal third, pores on interval 3 much deeper.

CAMBODIA: Kompong Kedey, 1 ex., and LAOS: Xieng Khouang, 1 ex. (*R. Vitalis de Salvaza*). TONKIN, 1 ex. (*coll. Fleutiaux*). Type in the British Museum.

It is curious that a single specimen should have been found in each of three different Provinces of Indo-China.

Bembidium kara, sp. nov.

Length 5-6.25 mm.; width 1.8-2.4 mm.

Black, very shiny, head and prothorax with greenish reflections, elytra very dark blue, slightly iridescent; buccal organs, joint 1 of antennae, and tarsi piceous.

Head smooth, eyes prominent, convex between frontal grooves, which are wide, deep, and parallel. *Prothorax* cordate, half as wide again as long, contracted slightly more in front than behind, sides moderately rounded and sinuate near the hind angles, which are sharp, but a little more than right, owing to the slight obliquity of base at sides, a rather feebly developed carina just above them, basal foveae small but fairly deep, and at some distance from sides, surface smooth, with a few punctures at sides of base and in foveae, basal depression uneven in middle, but hardly punctate. *Elytra* ovate, rather flat, basal border reaching stria 5, punctate-striate, all the striae deep throughout, the punctures fine, disappearing at two-thirds from base, apical stria and 5 continuous, 8 joining 9 at a fourth from base, inner intervals moderately flat, outer ones more convex, 3 with three well-marked pores, all adjoining stria 3, at a fourth, a half, and three-fourths, the setiferous pore generally to be found in the apical stria is placed on interval 5, adjoining stria 5, and it is usually followed by 2-4 smaller non-setiferous pores.

TONKIN: Chapa. LAOS: Ban Sop Vi, Lak Mune, Sop Soup, Ban Nong, Sala Nam Chan Chin, Ban Samang, Pak Seng, and Don Khona (all *R. Vitalis de Salvaza*). COCHIN CHINA: Cap St. Jacques (*coll. Fleutiaux*). INDIA, United Provinces: West Almora and in Swal River Basin (*H. G. Champion*). SIKKIM: Namsu, 2100 ft., and Gopaldhara, 4720 ft. (*H. Stevens*). Type in my collection.

I have not compared this species with any other, because I know of none like it. In some respects it is allied to the group generally designated *Plataphus* Motsch., but it differs from all the species of *Bembidium* known to me in its exceptionally deep and clearly cut striae, and in the presence of three pores on interval 3. In the Palaearctic species of this genus there are normally two pores, but in one or two, grouped under the name *Ocys*, there is only one: for the species just described I propose the group name *Triporus*.

Bembidium (Peryphus) vitalisi, sp. nov.

Length 5 mm.; wing 1.8 mm.

Black, shiny, with faint aeneous reflection: joint 1 of antennae, base of palpi, and legs (except knees) reddish, a faint dark red spot on elytra at apical fourth.

Head smooth, moderately convex, eyes prominent, frontal grooves wide, fairly deep, parallel, with some faint striation at bottom. *Prothorax* cordate, rather less than half as wide again as long, equally contracted at extremities, sides gently rounded, sinuate rather before the rectangular hind angles, basal foveae deep and rounded, bounded outwardly by a strong carina, surface smooth, base with a little coarse but rather vague puncturation. *Elytra* oval, fairly convex, punctate-striate, the striae not very deep but closely punctate, 2 fainter near apex, the remainder—especially the outer ones—obsolescent behind, but 7 clearly marked on basal half, apical stria sharply incised, intervals slightly convex.

Darker than *B. nitidulum* Marsh. and otherwise coloured, joint 1 of antennae only reddish. Head with more prominent eyes, the frontal grooves wider and straighter; prothorax similar in shape, median line finer, base less punctate; elytra a little less rounded at sides, the striae more finely punctate, 7 much more developed, sutural interval similarly raised.

LAOS: Hat Tiang, 2 ex. (*R. Vitalis de Salvaza*). Type in the British Museum.

October 1920.

A SAPROSITES (? PARALLELUS HAROLD) IN BRITAIN.

BY THE REV. C. E. TOTTENHAM.

Two specimens of this little Aphodiid-beetle were captured by myself on June 9th of this year in Arundel Park. They both occurred in very dry rotten beech-logs (at a depth of a foot or more in the wood) which were infested with *Dorcus parallelipedus* and its larvae. I am indebted to Mr. Champion for determining the insect for me and for adding some particulars as to its distribution, etc.

25 Dorset Road, Bexhill:

October 6th, 1921.

[The Aphodiid-genus *Saprosites* Redt. includes a large number of species distributed over the warmer parts of the Eastern and Western hemispheres, including Australia. The single representative appearing in the European Catalogue, *S. peregrinus* Redt. (1858), the type of the genus, is stated to have been found in abundance amongst orchids at Schönbrunn, Austria, and it was subsequently recorded from Colombia. Mr. Tottenham's insect is related to various Tropical American forms, and it can be referred provisionally to *S. parallelus* Harold, which came from the same country. The series placed under this name in the British Museum, from Guatemala, Costa Rica, Panama, and Colombia, some of which were captured by myself, vary greatly *inter se*, the Arundel insect being smaller than any of them and having more prominent hind angles to the prothorax; but without comparison with the type it would be impossible to identify *S. parallelus* with certainty. A. Schmidt (1910) gives an enlarged figure of it in Wytsman's "Genera Insectorum" (Aphod., t. 3, fig. 36). *S. grenadensis* Arrow (1903), from Grenada, W. I., is another allied form. The specimen sent me for determination by Mr. Tottenham may be described thus:—

Elongate, shining, piceous; head broad, very finely punctured, the clypeus broadly emarginate; prothorax transverse, rather convex, somewhat coarsely

punctured, with minute punctures intermixed, the lateral margins narrowly sinuato-explanate, the anterior angles obtuse but prominent, the hind angles subrectangular, the basal groove narrowed at the middle; elytra long, subparallel, very deeply crenato-striate, the interstices almost smooth, flat on the disc and cariniform at the sides, the humeri with a prominent tooth; anterior tibiae with three long, subequidistant teeth; intermediate and posterior tibiae much widened outwards, sharply dentate externally, the spurs very long, unequal in length, the longer one reaching beyond the second tarsal joint.

Length $3\frac{1}{2}$ mm.

The species of *Saprosites* live under bark, and how one of them could have been introduced into Arundel Park is a mystery. It may be observed, however, that *S. peregrinus* must have been brought over with orchids, and that one or two species of the allied genus *Ataenius* Harold have been carried into Europe in some way or other. *Pleurophorus caesus* Panz. and *Oxyomus porcatus* F. (as well as seven *Aphodii*), are common to Europe and N. America. The only species on the British list at all resembling the *Saprosites* is *P. caesus*, and this latter is probably an introduction here.—G. C. C.]

IPS (TOMICUS) EROSUS WOLL. IN BRITAIN.

BY DENIS J. ATKINSON.

In August last, while collecting in the Forest of Dean, I was fortunate enough to take *Ips erosus* Woll. breeding in large numbers in felled Scots pine. With it was also taken *I. sexdentatus* Börn., a beetle sufficiently uncommon as to be considered rare, but which latterly has seemed to be spreading. Both were taken in large numbers on the same logs, *erosus* in all its stages and *sexdentatus* as pupae and adults.

I. erosus is in appearance very similar to *I. laricis* F., with which it is very likely to be confused at first sight, but is somewhat smaller than the latter, the sutures of the antennal club are curved instead of straight, and the armature of the apical declivity of the elytra is different. The teeth in *laricis* are very similar in the two sexes, and are three in number, situated close to the margin of the declivity, at the ends of interstices 1, 3, and 6 respectively. In *erosus* the sexes differ considerably: the ♀ is armed with three small teeth, placed at some considerable distance from the margin; in the ♂ the teeth are four in number and close to the margin, as in *laricis*, and lie at the ends of interstices 1, 3, 4, and 5 respectively. The 2nd tooth is large and rectangular at the apex (whence is derived the name *rectangulus* Eichhoff), and the lowest tooth, being at the end of interstice 5, is higher up on the side-wall than the corresponding tooth in *laricis*.

On first seeing this beetle I thought it must be *I. acuminatus* Gyll., but at the same time was surprised to find *acuminatus* so small. I then tried to identify it with *nigritus* (*suturalis*) Gyll., which has been recorded once or twice in Britain. On showing the specimens to Dr. Munro he at first took them to be *nigritus*, and we endeavoured to place the beetle as such with the help of Reitter's key, only to find that it would not do. This key seemed to place it as *erosus*, and on subsequent comparison with specimens of both *nigritus* and *erosus* in the British Museum I satisfied myself that it was the latter. Col. Sampson has since very kindly confirmed this identification. As far as my memory goes, Eichhoff gives as the distribution of *Ips erosus*, S. Europe, the Mediterranean Coast, N. Africa, and the Landes in France, and its principal host-tree as *Pinus maritima*. The fact that it is a Mediterranean species makes it doubly interesting that it should have arrived in this country and succeeded in establishing itself as successfully as I found it to have done. In this connection Dr. Munro tells me of a record during the summer of 1920 (?), the only record, to his knowledge, of *erosus* being taken on *P. maritima*-timber, on a ship from the Mediterranean lying in Cardiff Harbour. It would seem, therefore, that some of these individuals must have been put ashore, and have since found their way up the Bristol Channel to the Forest of Dean, where they have taken quite successfully to *P. sylvestris* in place of the usual *P. maritima*. It is, of course, possible that these two records in two succeeding years are merely coincidences, bearing no particular relation to one another, and that *erosus* has been established for some years in the "Dean." It seems improbable however that, had such been the case, the beetle should have escaped notice until the present. The *Scolytidae* are a comparatively small family in this country and have been well worked over, and the "Dean" is a favourite hunting-ground. Moreover, the beetle, if taken in its brood-galleries, could not be mistaken, its appearance distinguishing it at once from any species other than *laricis*, and the pattern of its brood-gallery from the latter. *I. erosus* is a polygamous species, and constructs very clearly defined, many-armed (usually 3 or 4) galleries, diverging in a longitudinal direction from a small and narrow central "Rammelkammer." The larval-galleries are given off on either side more or less at right angles, and for some distance are very clearly defined and regular, after which they intermingle and become confused. The general effect is a very clean regular pattern. The galleries, both adult and larval, are chiefly in the bast, but slightly score the sapwood.

The fact that this beetle was found in such large numbers, and apparently so firmly established, would lead one to suppose that it is a

fairly hardy species, and is finding English climate and English timber quite to its taste, though as regards the former it has certainly enjoyed very favourable conditions throughout the past season. In any case it would seem worthy of attention as being a possible additional pest of the already sorely afflicted Scots pine.

13 Carlton Hill,
St. John's Wood, London, N.W. 8:
October 13th, 1921.

[Amongst some specimens of this genus sent me in 1874 by the late J. Chappell, under the name *Tomicus nigritus* Gyll., I have found a ♂ and ♀ of *erosus*. They were captured in or near a timber yard in the Manchester district, and their British origin is doubtful. These examples agree with others from the Mediterranean region and the Landes in my collection.—G. C. C.]

DESCRIPTION OF A NEW SPECIES OF THE LEPIDOPTEROUS
GENUS *MELANCHRA* HÜBN. FROM NEW ZEALAND.

BY G. V. HUDSON, F.E.S., F.N.Z.INST.

Melanchra averilla, n. sp.

The expansion of the wings of the female is about $1\frac{5}{8}$ inches. The fore wings have the costa nearly straight and the termen rather obliquely rounded with slight sinuations; *pinkish-brown much suffused with grey, especially towards the base and termen*; the principal markings are very finely indicated in black; *there is a conspicuous curved longitudinal streak from the base to about $\frac{1}{3}$* ; the first line is indistinct, very wavy, faintly outlined in brown; the claviform is small, cone-shaped; the orbicular is large, irregularly oval, almost wholly outlined in black; the reniform is large, rather indistinct, outlined in brown towards the base, but otherwise faintly indicated by grey shading; the second line is very faint, grey, sharply bent inwards before the dorsum; there is a series of dark-edged whitish subterminal dots and a V-shaped dark spot near the tornus; the tornal area is clouded with brownish-ochreous and the cilia are also brownish-ochreous. The hind wings are greyish-ochreous, darker towards the termen; the cilia are greyish-ochreous with whitish tips. The head, thorax, and fore legs are greyish-white, very finely speckled with pinkish-brown; the basal third of the antennae is whitish, the remaining portion blackish.

This species is evidently closely allied to *Melanchra ustistriga* Walk., from which it differs in the presence of a conspicuous basal streak, less distinct markings, smaller and less pointed claviform stigma, and much paler colouring, especially of the hind wings. Two female specimens were captured by Miss Averil Lysaght on Mount Egmont, in December last, at an altitude of about 3000 feet above the sea-level.

Hillview, Karori, N. Z.:
August 1921.

THE LIFE-HISTORY OF *SELANDRIA SERVA* F.

BY MISS E. T. CHAWNER, F.E.S.

On the 13th of May this year I netted a newly emerged female of this species, and as the larva was undescribed, I decided to try to induce her to oviposit. Accordingly I fed the fly on a drop of honey, which she took eagerly, and imprisoned her under a bell-glass with a selection of likely food-plants. She did nothing that day nor the next, but on the 15th, after another meal of honey, she laid 52 bright orange eggs, which were attached vertically to blades of couch grass (*Triticum repens*); about 6 to 10 on one blade. They were decidedly large for the size of the fly and very conspicuous, generally laid more or less in a double row, and attached to the grass blade by means of a slit which could be plainly seen on the other side of the blade. After the eggs were laid the fly's body looked quite empty and almost transparent, and she died a couple of days later. The Rev. F. D. Morice kindly identified the fly for me so that there should be no mistake as to the species.

My notes on the development of the larvae are as follows:—

May 23rd.—Eggs turning dark brown.

May 25th.—Larvae hatched, slate-coloured all over.

June 2nd.—First moult, larvae now pale, rather powdery grey, head pale brown with a dark line across face from eye to eye. They generally feed downward from the tips of the grass blades. Drop when disturbed and feed chiefly at dusk and through the night, hiding up by day.

June 6th.—The most forward are gradually turning light green.

June 12th.—All have now become light green with a pale brown head, having a dark line across the face. The second moult has taken place.

June 18th.—Third moult accomplished. Colouring now grass-green, whitish below spiracles, head and face as before. Have thickened considerably and appear flattened out.

June 30th.—Fourth and last moult. Appearance unchanged. They have begun going down into earth, where they make a dark cocoon mixed with grains of earth.

July 16th.—First fly hatched, a female, which laid 54 virgin eggs.

The flies from this brood were all males. The larvae have 11 pairs of legs, including prolegs and claspers, and when full-fed are from five to six lines in length. Very stout-bodied, head small, body deeply striated, dark green dorsal line, very sluggish, nocturnal, lying up by day among grass blades which exactly match their colouring. The best way to obtain specimens is by sweeping among coarse grass just before dusk. My larvae fed indifferently upon couch grass and cock's-foot grass (*Dactylis glomerata*). The species is double-brooded and may be found between May and October.

It will be seen that this larva closely resembles that of *Selandria sixii*, as described by Cameron in "Phytophagous Hymenoptera," vol. i. I have never reared *S. sixii*, so do not know if Cameron's description really applies to this species or to *serva*.

Forest Bank, Lyndhurst, Hants:

October 3rd, 1921.

OBSERVATIONS ON BRITISH COCCIDAE:
WITH DESCRIPTIONS OF NEW SPECIES.—VII.

BY E. ERNEST GREEN, F.E.S., F.Z.S.

During an inspection, by Mr. J. C. Fryer and myself, of a nursery garden at St. Albans, Herts, on the 5th of May last, three species of *Coccidae*—new to the British Isles—were found on plants recently imported from Japan. One of these is a hitherto undescribed species of *Lecanium*; the other two being identifiable as *Ceroplastes ceriferus* Anders. and *Ceroplastes floridensis* Comst., the last species having characters departing from the type to such an extent as to justify its description under a varietal name.

All these insects were living, and the *Ceroplastes ceriferus* was covering a batch of ova; but whether they could have survived the rigours of a British winter remains problematical. Both species of *Ceroplastes* are widely distributed throughout the tropical and subtropical regions. It is remarkable that Kuwana, in his several lists of Japanese *Coccidae*, has recorded not a single species of *Ceroplastes*.

Lecanium lichenoides, sp. nov. (Fig. 1.)

Adult female flattish, deltoid (*a*) or broadly ovate, narrower in front, or subcircular, occasional examples being even broader than they are long. The living insect is of an olivaceous grey tint above, marbled and mottled with black, and with a series of black fasciae projecting inwards from the margin of the abdominal area. The venter is dull castaneous, with conspicuous white streaks of waxy secretion defining the stigmatic areas. Old dead examples lose the greyish tints and assume a more or less uniform dark castaneous colour. Dorsum with a prominent medio-longitudinal and three transverse carinae. Antennae (*b*) 9-jointed; 2nd joint longest; 7th, 8th, and 9th shortest, equal. Limbs (*c*) relatively small, slender; tarsus two-thirds the length of the tibia; tarsal digitules long, minutely knobbed; ungual digitules slightly dilated; spines and setae few and small. Stigmatic clefts very shallow, scarcely appreciable. Stigmatic spines strongly developed; the anterior group usually with two only, of which the uppermost is twice the length of the other (*c*); the lower group with three spines, of which the median (*d*) is twice the length of

the other two. Marginal setae simple, slender, moderately long. Anal cleft about one-fourth the total length of the body. Valves of anal operculum together approximately quadrate; inner margin longest; base and outer margin of equal length. Dermal cells small, subcircular; more noticeable on the marginal area where they appear as darker spots, being filled with granular

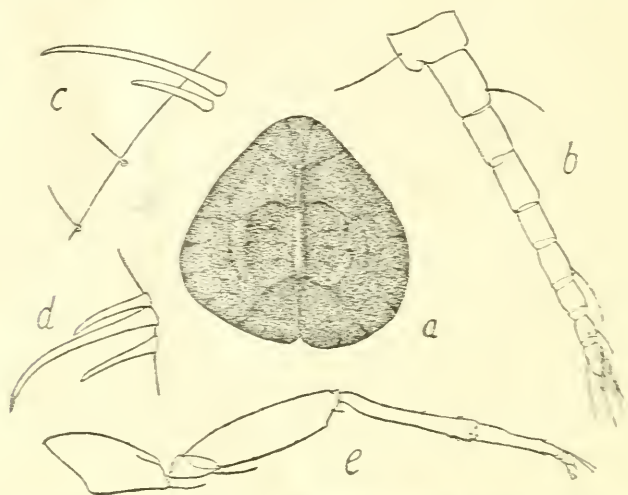


Fig. 1.—*Lecanium lichenoideus*: (a) adult female, dorsal view, $\times 5$; (b) antenna, $\times 130$; (c) upper stigmatic spines, $\times 220$; (d) lower stigmatic spines, $\times 220$; (e) posterior leg, $\times 130$.

matter. Numerous thick-rimmed, tubular pores, with trilocular or quadrilocular apertures, are distributed over the dorsum.

Length 4.5–6 mm.; breadth 4–6 mm.

On the stems and branches of *Quercus glandulifera* (plants recently imported from Japan). St. Albans, Herts; 5.v.1921.

A very distinct species, well characterized by its 9-jointed antennae and lichenoïd colouring.

Ceroplastes floridensis japonicus, var. nov. (Fig. 2 a, b, c.)

External characters as in the type, viz.:—waxy test creamy-white, slightly tinged with pink on the discal area; divided into distinct plaques of which the discal series is often asymmetrical (a), one side being occupied by a more prominent cushion of wax surmounted by a small oval boss.

The present form differs from the type in the further extension of the series of marginal spines on each side of the stigmatic areas. In typical *floridensis* these spines cease at a short distance above and below each stigmatic cleft, being replaced—in the intervals—by simple curved setae (c); while, in var.

japonicus, they extend much further along the margin and are practically continuous in the space between the two stigmatic areas, an occasional spine only being replaced by a seta (*b*). Overall length of example under observation 2.75 mm.

On the smaller branches of recently imported plants of Japanese Maple. St. Albans, Herts; 5.v.1921.



Fig. 2.—*Ceroplastes floridensis japonicus*: (a) adult female, dorsal aspect, $\times 5$; (b) marginal spines and setae, midway between stigmatic areas, $\times 450$; (c) marginal spines and setae of same area of typical *floridensis*, $\times 450$. *Ceroplastes ceriferus*: (d) adult female, lateral aspect, $\times 5$; (e) anal process, $\times 18$.

Ceroplastes ceriferus Anderson. (Fig. 2 *d*, *e*.)

This species may be recognized by the great thickness of the waxy covering. There are thicker cushions of wax on the four stigmatic areas, and a prominent dorsal hump terminating—above the anterior extremity of the insect—in an incurved process (*d*), but the test is not divided into distinct plaques. The valves of the anal operculum are carried at the extremity of an elongate, densely chitinous process (*e*). The wax is comparatively soft, and of a creamy or greasy consistency. Overall length of example under observation 5 mm.; breadth 4 mm. Well-developed examples from India may attain a length of 12 mm.

On stems of Japanese Maple. St. Albans, Herts; 5.v.1921.

Way's End, Camberley:

October 10th, 1921.

Deliphium crenatum Grav. in Cumberland.—It will be of interest to record the occurrence of this Staphylinid beetle in an English county, as hitherto it does not appear to have been noticed south of the Scotch border. While stripping the loose bark from a felled larch-tree a few days ago I bottled an *Onalium*-like insect which was not recognised at the time. When set, it was found to agree exactly with Scotch examples of *D. crenatum* in my collection. The tree in question came from Lazonby in the Eden valley, a district which has yielded a good many insects of considerable interest.—F. H. DAX, Carlisle : October 4th, 1921.

Polygonia c-album and other *Lepidoptera* in the Oxford district; with especial reference to supplementary emergences.—The exceptional abundance of the autumnal brood of *Polygonia c-album* has been the chief entomological event of the present season here. Hitherto this butterfly has been decidedly rare and sporadic in the district, and until this year not more than half-a-dozen specimens have come under my own notice from 1904 onwards. On July 22nd last I took a worn ♀ example near Cothill, Berks, which persistently refused to supply me with ova; and a fine specimen was seen (and missed) near the same place on August 19th. Early in September the insect suddenly became sufficiently plentiful to admit of three or four being seen at one time, sunning themselves with expanded wings on the purple flowers of the Devil's-bit Scabious, in which situation few if any of our butterflies present a more effective appearance. Stray examples, too, were not infrequently seen at the Michaelmas daisies and other flowers in the Oxford gardens, as well as on the abundant crop of ripe blackberries at Wytham Park and elsewhere. In fact, *P. c-album* was this season even commoner than *Aglais urticae*, which here has never fully recovered its former numbers since its almost complete failure in 1918. Comparatively few *Pyrameis cardui* were observed, but *P. atalanta* was common and exceedingly fine; a good look-out was kept for *Colias edusa*, which was fairly plentiful in the district last year, but I did not see a single specimen. The early brood of *Iunonia phlaeas* was not a strong one, but on July 22nd the second brood was out in large numbers, and the effects of the dry hot weather were very evident in the suffused and smoky appearance of nearly all the specimens, accompanied by a very marked tendency to the dark suffusion of the costal and hind-margins, and the enlargement of the black spots of the forewings. A good many examples with pronounced bronzy or brassy ground-colour were also noted, as well as several of an obscure light ochreous tint. This brood had practically disappeared by the middle of August, and early in September it was succeeded by an even more numerous third generation of richly and clearly coloured specimens, many of them, despite the prevalent drought, exceeding the normal dimensions of the species. Minor variations were frequent, and at least 20 per cent. of the whole were of the ab. *coeruleo-punctata* Tutt; and on October 1st I took the finest example of the ab. *radiata* Tutt that has yet come under my notice. The prolonged hot, sunny, and dry summer weather, though it has led to a quite abnormal scarcity of *Coleoptera*, has been exceptionally favourable both to second flowerings of plants and to unusual appearances of *Lepidoptera*. A small third brood of *Pieris brassicae* was first noticed on September 20th, and was last seen on October 13th; and *P. napi* was still on the wing on October 1st. The second brood of *Pararge*

megaera was fully out on July 22nd, and in the second week of September a fairly strong third emergence was observed, all the specimens being of full size and very rich deep colouring. On September 8th I noticed a freshly emerged ♀ *Celastrina argiolus* in my garden, and of *Epinephele ianira*, which was taken in fine condition on September 26th, a not entirely worn-out specimen was seen as lately as yesterday, October 17th. On the 8th of the present month, *Gonepteryx rhamni*, *Pieris rapae*, *Pararge megaera*, *Coenonympha pamphilus*, *Pyrameis atalanta*, *Polygonia c-album*, *Rumicia phlaeas*, and *Plebeius icarus* were still on the wing at Tubney Wood in more or less good condition. Specimens were noted at large of *Hemerophila abruptaria*, September 1st; *Parasemia plantaginis* and *Phibalapteryx tersata*, September 6th; and *Acidalia incanaria*, common throughout September up to the end of the month. My friend Mr. E. G. R. Waters has kindly supplied me with the following notes of extra emergences in this district:—*Augiades sylvanus*, a very fresh ♀ specimen at Cothill, September 25th; *Lithosia griseola*, one, quite fresh, on ivy-bloom, October 4th; *Uropteryx sambucaria*, on a gas-lamp, October 9th (Mr. J. Collins also took one under similar circumstances on the 3rd); *Acidalia aversata*, September 9th; *Hyphenodes costaestrigalis*, one, rather worn, at Cothill, October 4th; *Rhodophaea consociella*, Bagley Wood, in good order, September 19th, and somewhat worn, October 1st. He also notes the capture of a ♀ *Zizera minima* in fresh condition at St. Margaret's Bay, Kent, on August 17th.—JAMES J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford: October 18th, 1921.

Sapyga clavicornis Linn. and *Nomada guttulata* Schenck at Hastings.—While on a visit to Hastings during the latter part of May and early June last, I was surprised to see in several places *Sapyga clavicornis* which excavated in, and frequented, some wooden palings alongside the footpath leading from Hollington to the picturesque Church-in-the-Wood. Both sexes could be readily distinguished in the field from females of *Sapyga 5-punctata* by the rich yellow spots on the abdomen and by other characters. I captured half-a-dozen specimens of *S. clavicornis*, but this does not by any means represent the number of examples seen on or about the palings for a distance of half a mile or so. Indeed, in the particular stretch, *clavicornis* was the commoner of the two species during my observations, but the palings are in places fastened together by means of barbed wire which prevented the free use of a net. Dr. R. C. L. Perkins is of the opinion that *S. clavicornis* is less of a northern species than is generally supposed. I am not aware that it has been captured in Yorkshire since Frederick Smith's time. I myself have not failed to keep a sharp look-out for it. On a sunny bank separating the wooden paling fence from the pathway near Hollington Church-in-the-Wood, I noticed a colony of *Andrena cingulata* Fab., and determined to search for its inquiline, *Nomada guttulata*. I was successful in finding examples of both sexes, though the insect was evidently rare.—ROSSE BUTTERFIELD, The Museum, Keighley: October 1921.

Further note on *Rhadinoceraea micans* Klug.—Dr. Scott's paper in Ent. Mo. Mag. vol. lvii, p. 229, shows me that I had not recorded my observations on the egg-laying of this species, as I somehow supposed that I had. There is only one point I noted that is now perhaps worth adding to his record. The eggs

are laid, as he says, from only one surface of the leaf (the upper one?). The *Iris* (*pseudacorus*) leaf consists more of air than of leaf tissue, the air being in cells in longitudinal rows, each cell about 5 mm. long, though some reach 12 or more, and about one millimetre wide. The eggs are laid in these cells, never more than one in each cell, though they may be very close together. After watching the eggs being laid, it is after a few seconds practically impossible to identify the spot, but by splitting the leaf longitudinally the eggs are quite conspicuous in their several cells—on a small bit of leaf I still have I find 19 exit holes of the young larvae; this much exceeds Dr. Scott's count, but his specimens were laid naturally, mine in confinement in a jar. Notwithstanding this pressure, there is (and was) no example of two eggs in one cell. The nearest *I. pseudacrus* grows a mile and a half from here, and I fed the larvae, who took to it fairly well, on the leaves of a dwarf yellow-flowered *Iris* in the garden. I also gave some leaves of this to the flies for oviposition, with a comically tragic result. This *Iris* has a thin leaf and contains no air-cells, and compared with *I. pseudacorus* it may be called solid. The result was that *R. micans* (under compulsion of captivity perhaps) essayed to oviposit in it with the result that the ovipositor perforated the leaf, and the egg was laid in the open on the other side. This sawfly does not make a pocket for her egg, but takes advantage of a natural pocket in the food-plant, which is, however, palatially too large to fit the egg as a pocket made by the fly usually does.—T. A. CHAPMAN, Betula, Reigate: October 1921.

Insect Pests in Leeds and Horsforth.—We copy the following from the "Yorkshire Post" of September 30th:—"Insect pests have caused much annoyance in Leeds and Horsforth recently. A medical practitioner at Horsforth stated yesterday that during the last few weeks he had treated half-a-dozen persons who were bitten by mosquitoes in that portion of Horsforth which adjoins Newlay. Happily none of the cases proved serious. This doctor was bitten himself the other day, and he is confident that the bites were identical with those with which he was familiar on active service in France and Flanders. A few complaints of mosquito bites have been heard in Leeds, but apparently the nuisance is not so widespread as to be the subject of an official report to the public health authorities. Dr. J. J. Jervis, the Medical Officer of Health for Leeds, informed one of our representatives last night that the most serious inconvenience in the city at the present time arises from the unwelcome presence of crickets, which swarm from refuse tips in certain parts of Leeds, and make life almost unbearable for the occupants of adjacent houses. The insects are discovered in most unlikely places, and their constant chirping prevents people from sleeping. Strong complaints about this nuisance have been received by the public health authorities."—EDS.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *August 25th, 1921.*—MR. K. G. BLAIR, B.Sc., F.E.S., President, in the Chair.

Mr. Edwards exhibited the black "cherry-aphis," *Myzus cerasi*, and the greenhouse "white-fly," and referred to the methods of control of the latter

pest. Mr. Barnett, dark heath forms of *Hipparchia semele*, light-banded forms of the same, a dark *Rumicia phlaeas*, etc. Mr. Turner, a cocoon of *Rothschildia aurata* from which a large imago had emerged, with ova laid by it; a chrysalis of *Papilio thoas* remarkably resembling a piece of rotten stick; and a pupa of *Eacles magnifica*, pointing out the rough file-like surface, characteristic of the genus. Mr. Withycombe, *Ascalaphus ottomanus* from Digne, a new record for France. Mr. Coxhead, a Dipterous gall, *Oligotrophus corni*, found on dogwood. Mr. Enefer, living examples of *H. semele*, the beetle *Apion minutum*, and the bug *Syromastes marginatus*. Mr. Main, in his terrarium, the larva of *Necrophorus interruptus* reared from ova: it would probably pupate in the spring. Mr. Goodman, European species of "coppers" for comparison: *Heodes virgaureae*, *H. hippothoë*, var. *eurybia*, *Chrysophanus dispar*, and var. *rutilus*. Mr. Coppeard, one of six similar aberrations of *Arctia caja* in which the usually cream-coloured banding had a beautiful pink flush.

September 8th, 1921.—The President in the Chair.

Mr. H. Moore exhibited a nest of *Vespa germanica* from Kent, with 1052 dead wasps, another 100 or 200 in the nest and several dozen grubs still alive. Mr. T. H. Grosvenor, several hybrid Zygaenids from *Z. trifolii* taken in cop. with *Z. hippocrepidis*, various forms of *Z. trifolii*, including ab. *nigricans*, ab. *obscura*, a white specimen, very large and very small specimens, confluent spotted forms, with minute 6th spot, with wide border to hind wings, etc., and of *Z. filipendulae*, very large and very small forms, confluent spotted forms, several fine yellow forms etc. Mr. Hy. J. Turner, males and females of race *poseidon* and race *hecuba* of *Ornithoptera priamus* from Queensland and the Koi Islands respectively. Major Cottam, the chalk form of *Plebeius aegon* from N. Kent, *Euchloë cardamines*, with yellow hind wings, very pale *Hypocrita jacobaeae*, etc. Mr. Syms, *Chrysonela graminis* from Yorkshire, and *C. banksi* from the Isle of Wight. Mr. K. G. Blair, living larva of the sawfly *Eriocampa ovata* with its waxy secretion, and a living subapterous grasshopper *Leptophyes punctatissima*. Numerous reports were made on the season, and a discussion took place on immigration.

September 22nd, 1921.—The President in the Chair.

The evening was devoted to the demonstrations on a long series of lantern-slides by various members. Mr. H. Main, slides of the various phases in the life-history of the oil-beetle, *Meloë proscarabaeus*, a parasite in the larval stage of *Anthophora*; practically the whole of the details of the biology of the beetle were illustrated. Mr. G. T. Lyle, slides of details of Lepidopterous structure, habits, and development. Mr. W. J. Lucas, slides illustrating the Black Pond area near Oxshott before and after the devastation; and a few specimens of various insects. Mr. Bunnett, slides of various larvae and imagines, etc. Mr. Dennis, a slide of the ova of a *Cimex* sp., etc.—HY. J. TURNER, *Hon. Editor of Proceedings*.

THE LONDON NATURAL HISTORY SOCIETY: *Tuesday, October 4th, 1921.*
—MR. L. J. TREMAYNE in the Chair.

Amongst the interesting exhibits were some *Sirex gigas* from Aberdeen, *Aphomia colonella (sociella)*, Honey Moth, bred from a nest of *Bombus lucorum*

from Norfolk, *Botys flavalis*, *Chrysotoxum octomaculatum*, and *C. festivum*. Syrphid flies parasitic in the nests of bees and wasps, from Beachy Head, exhibited by Mr. Nicholson. Galls on leaves of *Ballota nigra* and *Artemisia vulgaris*, and on flower-heads of *Aster tripolium* from Essex. Second broods of *Macroglossa stellatarum* were reported by Messrs. Riches and Robbins, and of *Porthesia similis* by Mr. Nicholson. Mr. Horn remarked that larvae of *Agrotis segetum* were doing great damage to potatoes and cabbages in the Romford district.

Paper read:—"Notes from Eastbourne and district," by Mr. Nicholson.—
H. J. BURKILL, *Min. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, October 5th, 1921.*—
The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

The President announced that owing to the illness of Mr. H. Rowland Brown, M.A., Dr. H. Eltringham, M.A., F.Z.S., had kindly consented to act as Secretary for the remainder of the session.

The Treasurer called attention to the portraits of the Rev. W. Kirby and of Mr. W. Spence that had been bequeathed to the Society by the late Dr. Longstaff. A vote of thanks to Mr. J. J. Joicey, F.L.S., F.Z.S., F.R.G.S., for his generous gift of a lantern to the Society, was passed unanimously.

The following were elected Fellows of the Society:—Messrs. Charles L. Fry, 1621 Vallejo St., San Francisco, California; William F. N. Greenwood, Lautoka, Fiji; Henry W. Dobson, 14/16 Finkle St., Kendal; Kalidos D. Shroff, Nahani, Surat, India; Arnold Roebuck, Edgmond, Newport, Salop; the Rev. J. Wesley Hunt, 116 Cross St., Kroonstadt, Orange Free State; and Miss Amy Castle, Assistant Entomologist, Dominion Museum, Wellington, New Zealand.

Mr. E. E. Green, F.Z.S., communicated an extract from his journal on the habits of the bee *Anthidium manicatum*. Mr. T. L. H. Grosvenor exhibited some British species of *Zygaena* and remarked on the results of crossing certain species and varieties. Dr. Cockayne commented on the question of the identity of *Zygaena tutti*. Prof. E. B. Poulton exhibited an example of *Danaida chrysippus* that had been captured and subsequently rejected by a young shrike in South Africa; he also exhibited, on behalf of Dr. R. C. L. Perkins, F.R.S., a collection of terrestrial insects taken from the stomach of a trout in Devonshire, including, among others, 41 species of *Coleoptera*. Mr. M. E. Mosely expressed surprise that such a large amount of surface-food had been taken.

The following papers were read:—“On *Boreus hyemalis*,” by Mr. C. L. Withycombe; “Some apparently new S. African Genera and Species of the family *Pyrallidae*,” by Mr. A. T. J. Janse; “The African Species of the Genus *Neptis* Fab.,” by Dr. H. Eltringham, M.A., F.Z.S.; “The number of Joints in the Antennae of *Haliplidae* and *Paussidae* (Coleoptera),” by Mr. T. G. Sloan; “Observations in the Structure of some *Homoneura*, including the Diagnosis of two new Families of Lepidoptera,” by Dr. A. Jefferis Turner, F.E.S. Mr. A. T. J. Janse gave an account, illustrated with lantern-slides, on methods of collecting insects when travelling in S. Africa.

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THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY]

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THE MUSEUM, HULL;

AND

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TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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Dec
The Annual Subscription for 1922 is 15/-.

Third Series. No. 84.]
[No. 691.]

DECEMBER, 1921 [PRICE 2/- NET.

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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VOLUME LVII.

[THIRD SERIES—VOL. VII.]

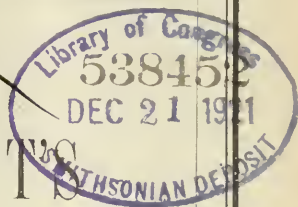
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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7 (nearest stations: South Kensington and Gloucester Road).—Dec. 7th, 1921, and Jan. 18th, 1922 (Annual Meeting), at 8 p.m.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.) Forthcoming meetings of the Society are—Dec. 6th: Annual General Meeting; Dec. 20th: Sectional meetings, Ornithology, Lepidoptera (The Emeralds, etc.), and Archaeology.

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

THE BRITISH SPECIES OF THE ANTHOMYID GENUS

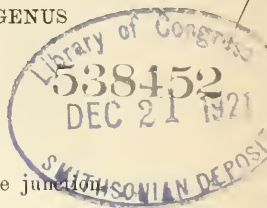
LIMNOPHORA DESV. (DIPTERA).

BY J. E. COLLIN, F.E.S.

(Concluded from *antea*, p. 248.)TABLE OF SPECIES (*Females*).

Division I. Cubital vein absolutely bare even on nodose junction with radial vein.

- 1 (10) Normally only three pairs of postsutural-dorsocentral bristles on thorax.
- 2 (9) A distinct anterodorsal bristle on middle tibiae.
- 3 (6) Arista subplumose, the longest hairs above and below together as long as the third antennal joint is wide.
- 4 (5) Greyer species without long posteroventral hairs on hind femora
..... 1. *litorea* Fln.
- 5 (4) Darker species with long posteroventral bristly hairs on hind femora
..... 10. *denigrata* Mg.
- 6 (3) Arista at most only pubescent.
- 7 (8) Head in profile with antennal prominence more projecting and angular. Jowls deeper (quite one-third as deep as eye). Facial orbits wider than third antennal joint. Ovipositor armed with minute spines and without conspicuous lamellae
..... 2. *surda* Ztt.
- 8 (7) Head in profile with antennal prominence more rounded and less projecting. Jowls hardly one-quarter as deep as eye. Facial orbits narrower. Ovipositor with conspicuous long-haired terminal lamellae..... 3. *contractifrons* Ztt.
- 9 (2) No anterodorsal bristle on middle tibiae. Thorax much greyer than in any of the above species and with narrow dark stripes
..... 4. *baltica* Ringd.
- 10 (1) Normally four pairs of postsutural dorsocentrals.
- 11 (12) Interfrontalia brightly shining and reaching to front of frons
..... 13. *aërea* Fln.
- 12 (11) Interfrontalia dull, or at least not brightly shining.
- 13 (14) Middle tibiae with a distinct anteroventral bristle. Ovipositor with distinct hairy terminal lamellae
..... 5. *brunneisquama* Ztt.
- 14 (13) Middle tibiae without the anteroventral bristle.
- 15 (16) Arista subplumose, the longest hairs above and below together as long as third antennal joint is wide
..... 10. *denigrata* Mg.
- 16 (15) Arista at most pubescent.
- 17 (18) Hind femora with a practically complete anteroventral row of bristles. Middle tibiae with two strong anterodorsal bristles. Largest species of the genus..... 6. *compuncta* Wied.
- 18 (17) Hind femora with anteroventral bristles on apical half only.
- 19 (26) Frontal stripe (including interfrontalia) wider opposite front ocellus than it is beyond middle. Frontal orbits at middle of frons half the width (or more) of frontal stripe.
- 20 (25) Interfrontalia very broad and long, occupying greater part of frontal stripe.



- 21 (22) Very few tiny bristles or hairs outside the rows of orbital bristles on frons. Prosternum bare. Ovipositor armed with spines
 16. *veterrima* Ztt.
- 22 (21) Numerous tiny bristles on frontal orbits. Prosternum with tiny bristles on each side-margin.
- 23 (24) Silvery-grey species with interfrontalia broadly reaching front of frons and almost confluent with frontal orbits. No facial keel between antennae. Acrostichals only biserial in front
 20. *virgo* Villen.
- 24 (23) More yellowish-grey species with interfrontalia very pointed in front and with a long very narrow wedge of the dull black frontalia on each side. A narrow but distinct facial "keel" between antennae at base. Acrostichals quadriserial in front
 19. *maritima* v. Röd.
- 25 (20) Interfrontalia normal. Face short and remarkably narrowed between vibrissal angles. 17. *aestuum* Villen.
- 26 (19) Frontal stripe narrower opposite front ocellus than it is beyond middle. Frontal orbits at middle of frons less than half the width of frontalia.
- 27 (28) Acrostichals strong and biserial with the rows close together. Facial orbits not narrower than third antennal joint
 14. *biseriata* Stein.
- 28 (27) Acrostichals at least quadriserial, usually very fine and hair-like, when some are strong the facial orbits are very narrow.
- 29 (30) An absolutely bare stripe the whole length of thorax between the outer (rather strong) acrostichal bristles and the row of dorsocentrals. Facial orbits not half as wide as third antennal joint
 18. *humilis* Zett.
- 30 (29) Thorax with scattered hairs on the whole space between the rows of dorsocentral bristles. Facial orbits wider.
- 31 (34) Middle tibiae with 1-2 distinct anterodorsal bristles.
- 32 (33) Jowls more than one-third as deep as the eye. Larger darker species. Interfrontalia slightly shining in some lights. Middle tibiae usually with two anterodorsal bristles
 7. *insularis*, sp. n.
- 33 (32) Jowls about one-quarter as deep as the eye. Smaller greyer species. Interfrontalia dull. Arista more distinctly pubescent. Middle tibiae with usually only one anterodorsal bristle
 8. *curata*, sp. n.
- 34 (31) Middle tibiae without anterodorsal bristles.
- 35 (36) Abdomen with large, broad, sharply differentiated, brown patches on a light greyish ground 15. *solitaria*, n. n.
- 36 (35) Abdominal patches small and often not sharply differentiated from ground-colour. Arista more distinctly pubescent.
- 37 (38) Greyer species. Thorax with narrow brown stripes. Ovipositor with distinct, hairy, terminal lamellae
 11. *vana* Zett.
- 38 (37) Darker species. Thorax without distinct stripes. Ovipositor without hairy terminal lamellae 12. *marina*, sp. n.

Division II. Cubital vein armed with tiny bristles at least on the nodose junction with radial vein.

- 1 (4) Frons nearly horizontal and consequently base of antennae nearly level with upper margin of eyes, and the angle formed by frons and face about 90° .
- 2 (3) Frons somewhat wider at base of antennae than at vertex. The shimmering central part of frontalia silvery
.... 29. *riparia* Flin.
- 3 (2) Frons of almost equal width throughout. The shimmering central part of frons more extensive and yellowish-brown
.... 28. *exuta* Kow.
- 4 (1) Frons more convex and sloping, so that base of antennae is lower and angle formed by frons and face is more than 90° .
- 5 (6) Thorax with only two broad dark stripes. Arista subplumose
.... 23. *notata* Flin.
- 6 (5) Thorax with more than two dark stripes. Arista at most pubescent.
- 7 (10) Normally only three pairs of postsutural dorsocentral bristles.
- 8 (9) Smaller species. Central thoracic stripe not widening out behind suture. Scutellum more unicolorous
.... 21. *triangula* Flin.
- 9 (8) Larger species. Central thoracic stripe usually confluent with side-stripes behind suture. Scutellum with distinct dark patches at sides 24. *maculosa* Mg.
- 10 (7) Normally four pairs of postsutural dorsocentral bristles. (If the arista is very distinctly pubescent conf. *maculosa* which sometimes might be included under this section.)
- 11 (14) Only rather short fine hairs beneath middle femora.
- 12 (13) Thorax slightly shining. Ground-colour of both thorax and abdomen not so light grey, and consequently the dark stripes and patches not so sharply differentiated. Jowls about twice as deep as third antennal joint is wide..... 22. *nigripes* Dsv.
- 13 (12) Thorax dull. Ground-colour light grey, the dark thoracic stripes and abdominal patches sharply differentiated. Jowls more than twice as deep as third antennal joint is wide
.... 26. *exsurda* Pand.
- 14 (11) Distinct long bristly hairs or bristles beneath middle femora.
- 15 (16) Abdominal patches small and rounded; first segment practically without dark markings..... 25. *scrupulosa* Zett.
- 16 (15) Abdominal spots large and broad; first segment extensively darkened. Thorax much more unicolorous brown, especially behind suture
.... 27. *uniseta* Stein.

In addition to the species dealt with in the above memoir it is necessary to refer to a *L. meadei* Schnabl from Scotland, a name to be found in the 'Zoological Record' for 1916. The identity of this species

must remain in doubt, as it has not been possible to refer to the paper (Mem. Acad. Sc. Petrograd, xxviii. No. 7) in which the name appeared.

The names of two other species (*trianguligera* Zett. and *sororecula* Zett.) are to be found in Verrall's 'List'—both apparently first recorded as British by Meade. The specimens upon which the records were founded have not been examined, but whatever they may be the names used by Meade cannot stand, for, according to Ringdahl, the types of both these species are represented in Zetterstedt's Collection by a mixture of described species already in the British List—*trianguligera* by specimens of *contractifrons* and *brunneisquama*, and *sororecula* by *brunneisquama*, *humilis*, and *contractifrons*.

Finally, while this memoir was passing through the press, it has been pointed out to me by Mr. J. R. Malloch, of the U.S.A. Department of Entomology, that the characters made use of by me for the differentiation of *Limnophora* sens. strict. had been independently discovered by him and made public in papers published in America.

November 1921.

CONOPHYMA MITCHELLI, SP. N., A NEW ALPINE GRASSHOPPER
FROM KASHMIR.

BY B. P. UVAROV, F.E.S.

♀. Much more rugose than any other known species of the genus. Antennae distinctly shorter than the head and pronotum together, slightly flattened, and basally somewhat dilated. Face feebly but distinctly reclinate. Frontal ridge in profile straight, between the antennae flat, in the rest shallowly sulcate, finely and remotely punctured; its margins straight, feebly and gradually divergent downwards, reaching the clypeus, fairly thick, smooth, with a few scattered punctures. Fastigium of the vertex almost horizontal, forming a distinct, though rounded, angle with the frontal ridge, twice as long as broad, with the apex obtusely triangular, with distinct subparallel lateral carinae and a feeble median carinula reaching the occiput, but not extending into it; distinct upper temporal foveolae, extending from the eyes to the fore lateral angles of the fastigium, triangular in form, a little longer than at the base broad; the surface of the fastigium scarcely compressed, with a few punctures near the apex. Eyes round, scarcely higher than they are long. Face, occiput, and cheeks smooth, but not shining. Pronotum slightly narrowed anteriorly, but without constriction, strongly coriaceous all over, its disc practically flat, with the transverse sulci feeble and irregular; metazona less than one half of the length of the prozona; the median keel in the prozona distinctly raised, straight, in the metazona lower and irregular; the

lateral keels developed in the fore half of the prozona, where they are thick and parallel, with the hinder ends somewhat incurved; they are obliterate in the rest of the prozona and distinct again in the metazona, where they are much more distant from each other and less distinct than in the prozona, slightly diverging backwards. The hind and fore margins of the pronotum are rather thick, and both obtusely excised. The lateral lobes form an angle with the disc, coriaceous throughout, though not as coarsely as the disc, with two oval impressions below the lateral keels in the prozona; the transverse sulci are deep. The fore margin convex; the lower margin with its fore half strongly oblique, widely rounded behind the middle; hind margin strongly oblique, slightly concave; the fore and hind angles rounded. Mesonotum scarcely extending beyond the pronotum, coarsely rugose, without distinct median keel. Metanotum subequal in length to one-half of the pronotum, more coarsely rugose than the latter, with a distinct, though somewhat irregular keel extending also on to the first tergite, which is a little shorter than the metanotum and almost as coarsely rugose. The subsequent tergites are also slightly transversely rugulose, with a scarcely distinct median keel. Prosternum with a thick and low, obtusely conical tubercle. Mesosternal lobes transverse, about twice as broad as they are long, with the inner angles very widely and obliquely rounded; the interspace between them about three times as broad as it is long, widened posteriorly. Metasternal interspace more than twice as broad as it is long. Mesopleura, metapleura, and the sides of the first abdominal segment coarsely rugose, very indistinctly separated from the dorsum. The last tergite rotundato-emarginate behind. Supra-anal plate triangular, scarcely longer than broad, with the apex slightly rounded, with a distinct transverse carinula obtusely angulate in the middle; cerci very short, obtuse. Fore tibiae with four spines along the inner and the outer margin, besides the apical spines. Hind femora extending a little beyond the apex of the abdomen. Hind tibiae distinctly widened towards the apex and slightly incurved, armed with eight spines on each side, including the apical spines.

General coloration very dark brown, blackish. Antennae reddish. Lateral lobes of the pronotum with a black vertical fascia in the fore part, extending along the upper margin also in metazona; the rest of lobes reddish-brown. The abdomen from above blackish at the base, becoming gradually paler towards the tip, with a paler median line. The underside of the body reddish, except the mesosternal and metasternal interspaces which are blackish. Hind femora distinctly reddish on the underside. Hind tibiae bright red.

Length of body 18 mm.; pronotum 3.75 mm.; metanotum 2 mm.; hind femur 10 mm.

The unique type of this interesting Grasshopper has been captured near Srinagar, Kashmir, at an altitude of about 12,000 feet, and sent for identification by the Hon. Director Trout Culture for Jammu and Kashmir States, F. J. Mitchell, to whom it is dedicated.

This species is easily separated from the other known members of the genus *Conophyma* by its very coarse sculpture, as well as by the

peculiar shape of the fastigium of the vertex; the latter character is so peculiar that it is possible that a new genus may be based on this structure, when the male of *C. mitchelli* is discovered. The type is in the British Museum.

November 1921.

NEW SPECIES OF STAPHYLINIDÆ FROM INDIA (2).

BY MALCOLM CAMERON, M.B., F.E.S.

The following species are described in this contribution. The types are in the Natural History Museum, S. Kensington, except where otherwise stated.

Dianous bisignatus.

Creophilopsis (n. gen.) *semiaeneus*.

Lathrobium semicaeruleum.

Quedius (*Raphirus*) *rugosus*.

Pammegus andrewesi.

Placusa intermedia.

Dianous bisignatus. n. sp.

Black, shining, the head, thorax, and abdomen (above) scarcely aeneous, the elytra with a small round dull orange spot a little behind the middle, and distinct greenish-copper and violaceous reflex, especially posteriorly. Antennae, palpi, and legs black.

Length 6 mm.

Amongst the Indian species with spotted elytra intermediate between *D. luteoguttatus* and *distigma*, Champ., in general appearance nearer the former, but differing in the following respects: the head is not so broad, the vertex is more elevated, so that the intra-ocular furrows appear narrower and deeper, the eyes are smaller and the puncturation coarser, the thorax is more enlarged in front and the sculpture yet more coarse, the orange spot on the elytra is duller, the metallic reflex more pronounced, and the 4th joint of the tarsi is narrowly bilobed; from *distigma* by the scarcely metallic head, thorax, and abdomen, smaller elytral spot and much more rugose sculpture of the thorax and elytra.

Head black, shining, in certain lights with trace of aeneous reflex, broader than the thorax, the intra-ocular furrows distinct, converging in front, coarsely and closely punctured. Antennae black, long and slender, all the joints longer than broad. Thorax with the sides rounded and dilated before the middle, nearly parallel posteriorly, the disc more or less obliquely impressed on either side; sculpture coarse, consisting of large, more or less confluent punctures (especially in front and on the sides) which form rugae posteriorly. Elytra much wider and distinctly longer than the thorax, longer than broad, feebly impressed internal to the shoulders; sculpture in front consisting of coarse confluent punctures, verticose-rugose behind. Abdomen very finely, closely,

and uniformly punctured, finely grey pubescent, apex penicillate, the under surface distinctly aeneous, finely and uniformly punctured.

Hab. Lebong, Bengal, alt. 5000 feet (*H. M. Lefroy*: ix.1908).
A single ♀.

Lathrobium semicaeruleum, n. sp.

Moderately shining, the fore-parts blue, the abdomen black; mouth-parts pitchy. Antennae and legs black.

Length 7 mm.

Very distinct from all the Indian species by the coloration. In build very similar to *L. laevipenne* Heer, but the head is rather broader and the thorax shorter.

Head wider than the thorax, as long as broad, the temples parallel, the posterior angles rounded; puncturation coarse, umbilicate and close, in front not so close; vertex with an almost smooth shining, transverse space. Antennae with all the joints longer than broad, the 4th to the 10th scarcely differing among themselves. Thorax oblong, the anterior and posterior angles rounded, the disc with smooth central line throughout; puncturation umbilicate, coarse, and rather close. Elytra distinctly longer and a little broader than the thorax, coarsely and rather closely punctured. Abdomen with the first three visible segments transversely impressed at the base, the first four moderately closely and moderately coarsely punctured, more especially at the bases, the two terminal segments much more finely and less closely punctured; pubescence moderate, silvery.

♂. 6th ventral segment with a deep, semi-oval excision of the posterior border, in front with a triangular smooth impression; 5th with a pointed, erect tubercle in the centre, the surface between this and the posterior border smooth and shining; 4th with a minute tubercle in the centre.

Hab. Gopaldhara, Sikkim (*H. Stevens*), West Bhatkot, alt. 4000 feet, and West Almora, Kumaon (*H. G. Champion*: iii.1919, iv.1920).

Pammegus andrewesi, n. sp.

Black, shining; the thorax finely but not very closely punctured; elytra coarsely and rugosely punctured; abdomen slightly iridescent; antennae black; legs reddish, the tibiae pitchy.

Length 10 mm.

Head small, orbicular; eyes large, their diameter much greater than the length of the temples; puncturation rather coarse near the eyes and on the base, and not very close, sparingly intermixed with much finer punctures, vertex almost smooth; pubescence sparing, setae black. Antennae rather short and slender, the 2nd and 3rd joints of equal length, the 4th to the 7th a little longer than broad, gradually decreasing in length, the 8th square, the 9th and 10th scarcely transverse. Thorax scarcely transverse, the sides very

feebly rounded, distinctly more narrowed in front than behind, all the angles rounded; puncturation rather fine, not very close, and sparingly intermixed with yet finer punctures; pubescence rather coarse, sparing. Scutellum triangular, moderately finely and closely punctured. Elytra scarcely longer, but a little broader than the thorax, transverse, moderately coarsely, closely, and rugosely punctured; pubescence moderate, rather coarse. Abdomen a little narrowed behind, moderately coarsely and somewhat closely punctured, a little more finely posteriorly; posterior margins of 4th, 5th, and 6th segments crenulated; pubescence rather long, coarse, and moderately close.

Hab. Nilgiri Hills (*H. L. Andreues*).

The facies of this species is very similar to that of *Philonthus fumarius* Gr., and it would appear to differ from *P. flavipes* Fauv. in the darker legs and in the absence of any definite dorsal series of large punctures on the thorax.

A single ♀. Type in my collection.

CREOPHILOPSIS, n. gen.

Labrum bilobed; mandibles slender at the apex, at the middle each with a broad, stout, bicuspid tooth. Maxillary palpi 4-jointed, 1st joint small, 2nd elongate, gradually dilated towards apex, the 3rd considerably shorter than the preceding, narrow at the base, and widened distally, the 4th a little longer than the 3rd, cylindrical, the apex truncate; tongue short and broad, entire, the anterior margin rounded; labial palpi 3-jointed, the 1st joint rather short, the 2nd a little shorter than the preceding, dilated towards the apex, the 3rd compressed, triangular, the distal border truncate, a little longer than the 2nd; antennae filiform; gular sutures united in the middle; superior curved line of the thorax but little deflexed, not uniting with the inferior; mesosternal process short, acuminate, the sides bordered; metasternal process broadly rounded, not nearly meeting the mesosternum, from which it is separated by a rather long intersternal piece; middle coxae narrowly separated; tibiae spinose; anterior tarsi strongly dilated, spongy beneath (at least in the ♂); tarsi 5, 5, 5, the middle pair with the 1st joint rather long, about as long as the three following together, the 2nd to the 4th short, gradually decreasing in length, the posterior pair with the 1st joint elongate, as long as the three following united, the 2nd, 3rd, and 4th gradually decreasing in length.

In build this genus resembles *Creophilus* Mann. Its position would appear to be near *Tympanophorus* Nordm. and *Pammegus* Fauv.; from the former it is distinguished by the dilated anterior tarsi and the truncate 4th joint of the maxillary palpi; from the latter by the shorter truncate 4th joint of the maxillary palpi and the dilated tarsi; from both by the different facies and large transversely quadrate head and parallel form.

Creophilopsis semiaeneus, n. sp.

Rather robust, parallel, shining metallic-green, the abdomen black; palpi reddish; antennae reddish-brown, the first two and the last joints reddish-testaceous; legs pitchy-brown.

Length 15 mm.

Head transversely quadrate, the eyes large, their diameter much greater than the length of the temples; the posterior angles rounded; neck very broad; puncturation of the vertex and front very fine and sparing, mixed with larger punctures on the temples and behind the eyes, where on either side there is a large setiferous pore. Antennae long, all the joints distinctly longer than broad, the 4th to the 7th differing little amongst themselves, the 8th, 9th, and 10th gradually diminishing in length. Thorax slightly transverse, the sides nearly straight, feebly converging in front, the anterior angles rounded, the posterior angles effaced; disc with a single small puncture on either side, the rest of the surface exceedingly finely and rather sparingly punctured. Scutellum black, finely and pretty closely punctured. Elytra as long and as broad as the thorax, transverse, metallic-green with copper reflex; on either side of the suture with a somewhat obsolete row of larger punctures, otherwise moderately finely and not very closely punctured, with yet finer punctures sparingly interspersed. Abdomen closely and finely punctured throughout, rather more sparingly so behind, pretty closely clothed with black pubescence.

♂. Anterior tarsi strongly dilated; 6th ventral segment with an oblique excision of the posterior margin.

Hab. Hakachin Hills, Burma (*F. F. F. Venning*: 12.xi.1909).

Quedius (Raphirus) rugosus, n. sp.

Shining, head and elytra metallic-green, thorax purplish-green; abdomen black, with the pubescence golden; fore parts coarsely and rugosely punctured; antennae and legs dark, the coxae and femora more or less testaceous.

Length 6 mm.

Scarcely differing in size or build from *Q. auricomus*, Kies., but remarkable for the coarse rugose sculpture of the fore parts. Head suborbicular, with the eyes nearly as broad as the thorax; eyes very large; temples scarcely visible; coarsely, closely, and rugosely punctured, front with a small nearly smooth space. Antennae short, the 3rd joint longer than the 2nd, the 4th a little longer than broad, the 6th to the 10th scarcely differing amongst themselves, and as long as broad. Thorax about as long as broad, the sides gently rounded, a little more convergent in front than behind; on either side of the middle line with an irregular row of 11 or 12 very large umbilicate punctures, laterally with closely placed, irregular, confluent, larger and smaller punctures, near the basal margin and external to the dorsal row more or less smooth. Scutellum smooth. Elytra a little longer and broader than the thorax, as long as broad, puncturation coarse, close and confluent, almost forming rugae; pubescence scanty and coarse. Abdomen pointed, black, rather finely and not very closely punctured, very strongly transversely strigose; pubescence rather coarse and moderately close, black, the first five segments on either side with a patch of distinct golden hairs.

♂. 6th ventral segment with semicircular excision, the surface in front glabrous.

Hab. Lebong, Bengal, alt. 5000 feet (*H. M. Lefroy*: ix.1908); West Almora (*H. G. Champion*).

Placusa intermedia, n. sp.

Depressed, black, greasy-lustrous; elytra obscure brown; the first three joints of the antennae and the legs reddish-testaceous.

Length 3 mm.

A little larger and more depressed than *P. tuchyporoides* Walzl and with considerably narrower thorax, longer and more slender antennae, and finer puncturation of the fore parts. Head broad, narrower than the thorax, the disc broadly flattened, very finely and obsoletely punctured, finely and densely coriaceous. Antennae with the 2nd joint a little shorter than the 3rd, the 4th scarcely longer than broad, the 5th perceptibly shorter, the 6th to the 10th transverse, gradually increasing in breadth, the 11th stout, oval. Thorax transverse, fully one-third as broad again as long, depressed, widest at the junction of the anterior and middle thirds, from thence rounded and contracted anteriorly, narrowed more strongly posteriorly to the obtuse but prominent posterior angles in a feebly sinuated line, the base distinctly bisinuate; disc broadly impressed posteriorly; puncturation close, fine and asperate, and with a transverse row of four rather small punctures across the middle. Elytra as long as, but broader than, the thorax, transverse, closely, finely, and asperately punctured. Abdomen gradually and slightly narrowed posteriorly, densely, finely punctured and pubescent.

♂. Posterior border of the 8th dorsal segment emarginate on either side, rounded in the middle, and the emargination bounded externally by a sharp spine.

Hab. Nilgiri Hills (*H. L. Andrewes*).

Type in my Collection.

This species appears to be intermediate between the *Placusa* (s. str.) and *Calpusa* groups in the build of the thorax.

November 1921.

STENOPELMUS RUFINASUS GYLL. IN NORFOLK.

BY H. J. THOULESS.

At a recent meeting of the Norfolk and Norwich Naturalists' Society a discussion took place with regard to *Azolla filiculoides* in local waters, in the course of which I happened to mention that a weevil attached to this plant had recently been recorded. A fortunate result was that a few days later, Capt. S. V. Green, of Norwich, sent me a small

weevil from an *Azolla* he had under observation. I felt there could be no doubt that it was *Stenopelmus rufinasus*, and on November 5th I paid a visit to the Bure marshes, and on the *Azolla* there found the beetle not uncommonly. It is, however, extremely difficult to see, as it nestles closely among the fronds of the *Azolla* and exactly resembles the shoots of the plant, from which it is not readily shaken, but I secured a supply by carefully examining the plants individually under a magnifying-glass.

November is scarcely the month one would consider the best time to find such a beetle, but I judge it is so in the case of this species, as it appeared to be just emerging, and some of the specimens, although in beautifully fresh condition, were not fully mature. On the plants were larvae and pupae, evidently of the weevil, the former yellowish-green maggots with black heads, which were eating holes in the fronds, and the latter spun up in black cocoons among the bases of the rootlets.

It may be interesting to recall that *Azolla filiculoides* is a small plant which floats on the surface of stagnant water after the manner of duckweed, to which, however, it has not a close relationship, being a flowerless plant allied to the ferns. It is a native of California, and was first noticed in the ditches on the Bure marshes in 1908. It now occurs over a wide area in the district.

I may mention that Mr. Champion has very kindly examined specimens of the beetle and has confirmed the identification.

"Corfe," College Road, Norwich.

November 14th, 1921.

Physocephala rufipes and *Aphomia colonella* in a nest of *Bombus lucorum*.—A nest of this *Bombus* in a haybox was sent to me last autumn by a correspondent at Shouldham, Norfolk, and from it emerged a fine ♀ of the Dipteron *P. rufipes* on June 8th, 30 *A. colonella* (*sociella*) exhibiting a fair range of variation, some scores of *Oecophora pseudospretella*, and hundreds of *Endrosis lineella*. There were also swarms of an Acarid, *Glycyphagus plumiger*, amongst the debris of the nest, but these may have originated in the hay (of which this mite is very fond), and simply invaded the *Bombus* nest therefrom as a likely source of attractive provender.—C. NICHOLSON: October 1921.

Note on Aleyrodes proletella L.—The Cabbage White-fly is always with us, but this autumn it seems to have been unusually abundant. From throughout southern England complaints have been sent in regarding it. It is not

until the adults hatch out that attention is drawn to them; the small, roundish, white pupae on the backs of the leaves either remain unobserved or the casual observer fails to connect them with the swarms of Snow-fly or Ghost-fly, as they are popularly called, which arise from the cabbage leaves and after a short time settle down again like snow-flakes when they have been disturbed. The systematic position of *A. proletella* remained uncertain for some time. It appears in the "Systema Naturae" as *Phalaena (Tinea) proletella*, just as the uninitiated to-day still regard it as a small moth; and it was not until 1795 that Latreille assigned the insect to the *Aphidina*, Burmeister in 1835 removing it to the *Coccina*. The matter was finally settled in 1840 by Westwood creating a new family, *Aleyrodidae*, for its reception. One of the best accounts of the life-history of the Cabbage White-fly is to be obtained in Réaumur, *Mémoires*, vol. 2, pp. 302 *et seq.*, 1736, and very little has been added to our knowledge of the species since that date. With us, *A. proletella* may be obtained, most years, throughout the whole twelve months. It seems to be very resistant to cold; Mr. Champion brought in a few days ago a vigorous colony, and he informs me that it is still very abundant in his garden at Horsell, Surrey. Situated as the pupae are on the underside of the leaves of the host-plant, control is difficult, and probably the best and cheapest method is hand-picking and burning of infested leaves. This species is not confined to the genus *Brassica*; it is also to be found on *Chelidonium majus*. I received in July a number of pupae on the latter plant from Mr. E. E. Green. It is generally stated that another species (*A. brassicae* Walker) is also found on the cabbage, but I have not yet been able to satisfy myself as to whether this is really a distinct species. I should very much like to know what other authors have to say on the subject.—F. LAING, Natural History Museum, S. Kensington: November 12th, 1921.

The "Wiener entomologische Zeitung."—The parts of this publication issued during the war and subsequently have been sent us by the present Editor, Prof. A. Hetschko, Kameral-Ellgoth bei Teschen, Silesia (Czechoslov. Rep.), to whom all communications have now to be addressed. The death of Edmund Reitter on March 15th, 1920, and the difficulty of continuing such work at the present time, has caused delay in publication, one part only having appeared per year during 1919 and 1920. In the "Festschrift" (Wien. ent. Zeit. xxxiv, heft viii-x), issued on October 22nd, 1915, his seventieth birthday, will be found a portrait, a catalogue of his papers written during the years 1869-1915 (949 in number), and an alphabetical list of the 955 genera or subgenera, 6296 species, and 1105 varieties or aberrations described or named by him. In the obituary notice published five years later (*op. cit.* xxxviii, heft i-iii), the number of titles of his papers is brought up to 1018.—EDS.

Deliphium crenatum Grav. in England.—In connection with Mr. Day's note on this species (*antea*, p. 261), I took about a dozen specimens of the beetle under the bark of a fallen larch in Dipton Woods, near Hexham, in November, 1918. The capture was, however, not recorded at the time.—GEO. B. WALSH, 41 Gladstone Street, Scarborough: November 1921.

Stenopelmus rufinasus Gyll. in Belgium.—Apropos of Mr. O. E. Janson's recent capture of a specimen of this curious weevil in the Norfolk fens on July 24th last (*antea*, p. 225), it may be noted that Mons. L. Frennet has just recorded an example from Calmpthout, Belgium, taken on May 29th by M. Lestage (Bull. Soc. Ent. Belgique, iii, pp. 137, 138, November 3rd, 1921). It has also been found in Holland by Dr. Everts.—Eds.

Trichius fasciatus L. in London.—It seems desirable to put on record the occurrence of an example of this beautiful beetle on a flower-head of *Heracleum giganteum* in the recreation ground adjoining the Nature Study Museum at Stepney in June last. I have the specimen, which was kindly presented to me by the Curator of the Museum, Mr. P. W. Horn. It seems probable that the insect came from some timber at the docks.—C. NICHOLSON, 35 The Avenue, Hale End, E. 4: October 18th, 1921.

Hydurgus ligniperda F. and *Ips (Tomicus) sexdentatus* Börn. in Britain.—*H. ligniperda* was found in pit props in the north of England many years ago, but on April 19th, 1919, I took one alive on the sandhills at Oxwich Bay, and on March 13th, 1920, Dr. Nicholson found another in the same locality. This occurrence in successive years looks as if the beetle was established in the neighbourhood. In this connection it may be interesting to note that *Ips (Tomicus) sexdentatus*, which was captured by me in abundance in the Clyne Woods near Swansea, in 1919, under bark of felled *Pinus austriaca*, has now turned up in standing trees of *Pinus maritima* at Oxwich Bay. Mr. Wakefield reported it in great numbers in October last, and from an intimate knowledge of the locality can state that the trees have only been attacked quite recently. It may be remembered that these two species, as well as *Ips (Tomicus) erosus* Woll., were recorded by Mr. C. Bartlett, in the present volume of this Magazine (*ante*, p. 15), as having been taken in drift pine-logs washed up at Mortehoe, N. Devon.—J. R. LE B. TOMLIN: November 12th, 1921.

Sirex juvencus in Yorkshire.—On Sept. 28th a local chemist handed to me a pill-box containing a number of insects of different orders, which he had taken out of his window. Amongst the usual common insects was a small female *Sirex juvencus*, not more than one half the size of the three specimens previously recorded from Yorkshire, all of which I have seen. It is difficult to say how it got into the place where it was found; it must have entered the shop from the street. Possibly there is some attraction about a chemist's shop, for one of the earliest records for this locality, of *S. gigas*, is also from a chemist's shop in what was then a country village, and dates back to 1830.—E. G. BAYFORD, Barnsley: November 1921.

Euryproctus (Hyppamblys) buccatus Holmgr. at Carlingford.—When stopping at Carlingford, in County Louth, in June last, I was fortunate enough to take a specimen of this Ichneumon fly. I captured it along a field-path which runs by the edge of a field, on June 7th. This specimen is a male, that which I

took at Poyntzpass (*vide* "Irish Naturalist," xxix, 1920, p. 19) was a female. I shall not have an opportunity of looking for it here again as I am leaving Poyntzpass next month.—W. F. JOHNSON, Poyntzpass: November 4th, 1921.

Obituary.—*Albert Brydges Farn.* We regret to announce the death of this well-known Lepidopterist, which took place at his residence, Ganarew, near Monmouth, on October 31st. A more detailed notice will, we hope, appear in an early number of this Magazine.—EDS.

Review.

"INSECT TRANSFORMATION," by GEORGE H. CARPENTER, D.Sc. London: Methuen & Co., Ltd., 1921. 8vo. Pp. x & 282, 3 Plates, and 124 Text-figures. Price 12/6 net.

This book, as the author states in the preface, is designed to serve as an introduction to the study of growth and change in the life of insects. He retells many well-known stories and calls attention to some structural details that have hitherto escaped mention in text-books, and discusses the relation of such details to the wider problems of insect life-histories. The subject is arranged under eight chapters: (i) Introduction; (ii) Form, growth and change; (iii) The open type of wing-growth; (iv) The hidden type of wing-growth; (v) Some wingless insects; (vi) The class and orders of insects; (vii) Growing insects and their surroundings; (viii) The problems of transformation. Commencing with a grasshopper, as a generalized insect showing no striking difference between young and adult, the author gives, under Chapter ii, a full account of its structure throughout the whole period of its existence. This is followed by a representative selection from most of the other orders of insects, numbering 23 in all, which are treated and illustrated in the same way, the description of the adult being given only as far as is necessary to elucidate the structure of the larvae, pupae, and immature stages generally. Dr. Carpenter has devoted many years to the study of the earlier stages of various insects, and the result of this work is included in the present volume, supplemented of course by much additional matter compiled from the writings of other specialists.

In his summary at the end of the volume, p. 271, he remarks very truly that "in this brief and imperfect discussion of the problems presented by the transformations of insects, it has been seen how details of the varying life-histories of different types—grasshopper, dragon-fly, beetle, butterfly, bee, blue-bottle—throw light on the development of the class as a whole through the ages of geological time. As one traces the life-cycle of an individual insect, lasting perhaps for a few weeks only, or at most for a few years, it is inspiring to think of the changing forms and conditions which are indicated in the countless thousands of generations of the creature's history, reaching back to the far-off period of the Coal-Measures and beyond."

The book is extremely well printed and indexed, and, considering the present cost of such work, the price charged is quite moderate, and this fact will doubtless add to its circulation.

Societies.

THE LONDON NATURAL HISTORY SOCIETY: Lepidoptera Section. *Tuesday, October 18th, 1921.*—Dr. COCKAYNE in the Chair.

Mr. Bell reported *Thera variata* form *obeliscata*, second brood, and *Porthesia similis* taken recently at a lamp. Mr. Riches exhibited a series of *Rumicia phlaeas* bred out the previous month from larvae found at Dartford. Mr. H. B. Williams, the same species with several varieties, a specimen of *Epinephele janira* with the right fore wing mostly whitish in colour. Also varieties of *Melitaea athalia*, *M. cinxia*, and *Abraxas grossulariata*. Dr. Cockayne, larvae of *Epinephele tithonus*. Mr. H. B. Williams read some interesting notes on the British "Skippers."

Tuesday, November 1st, 1921.—Lepidoptera Section: Dr. COCKAYNE in the Chair.

Mr. C. H. Williams exhibited a series of *Rumicia phlaeas* with several varieties. Dr. Cockayne, *Sesia scoliaeformis* and a ♀ *R. phlaeas* ab. *magnipuncta* with tails. Mr. H. W. Wood, a fine series of *Brephos parthenias* taken in Surrey, 1921, with several interesting bred forms. Dr. Cockayne contributed some notes on the "Distribution of *S. scoliaeformis*."

Plant Gall Section: Mr. L. B. HALL exhibited a large number of galls, including those caused by *Eriophyes atrichus* on *Stellaria graminea*, *E. eusapis* on *Lotus corniculatus*, *E. ilicis* on *Quercus ilex*, *E. macrotrichus* on *Carpinus betulus*, *E. pteridis* on *Pteris aquilina*, *E. tiliae* var. *exilis* on *Tilia grandifolia*, *Perrisia bryoniae* on *Bryonia dioica*, *P. carpinii* on *Carpinus betulus*, *P. silvicola* on *Stellaria holostea*, *P. tubicola* on *Cytisus scoparius*, *Pemphigus filaginis* on *Gnaphalium uliginosum*, various Sawflies and Cecidomyidae on different species of Willows, and a micro-lepidopteron in the stem of *Beta maritima*. Mr. Hall recorded *Isosoma graminicola* galling *Agropyron pungens* near Tilbury—apparently a fresh host-plant record for the gall. A paper was read on the galls on *Rosaceae*, illustrated by specimens.—H. J. BURKILL, *Min. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, October 19th, 1921.*—The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

The presentation by Mr. H. Donisthorpe of a portrait drawing of Mr. H. W. Bates to the Society was announced, and a special vote of thanks was passed to the donor.

The following were elected Fellows of the Society:—Messrs. H. J. Wilson, O.B.E., M.A., F.Z.S., 139 Bishops Mansions, S.W. 6; Alexander John Nicholson, University of Sydney, New South Wales; F. N. Chasen, M.B.O.U., Assistant Curator, Raffles Museum, Singapore; Baron J. Bouck, Springhill, South Godstone, Surrey; and Percy A. Glick, 903 West Illinois, Urbana.

Mr. G. Talbot exhibited, on behalf of Mr. J. J. Joicey, new and rare *Lepidoptera* collected by Mr. Pratt in the Weyland Mountains, New Guinea, and also read a letter describing the country from which the specimens came. M. F. Le Cerf, on behalf of Mr. J. J. Joicey, exhibited several new forms of African *Papilios*; comments were made on this exhibit by the President and Professor Poulton. Mr. W. G. Sheldon, a series of 1300 specimens of *Peronea cristana*, including examples of all the 72 named forms; also a series of about 250 specimens of *Oxigrapha literana*. Professor Poulton, examples of a form of *Heodes phlaeas* from S.W. Uganda, and discussed its relations with *H. abbotti*. He read some details of the genitalia of these forms supplied by Dr. Chapman. He proposed to treat *abbotti* as a race of *phlaeas*, and suggested the name "*ethiopica*" for the new race from Uganda. Mr. Donisthorpe exhibited examples of *Gymnetron squamicolle* from Ireland; the pupa and larval skin of *Cassida nebulosa* taken on *Chenopodium album*; and larvae, both dead and living, of *Trinodes hirtus*. Mr. J. J. Atkinson, examples of *Ips erosus* found breeding in the Forest of Dean, and read some notes on this bark beetle and on allied species.

The following paper was read:—"New or little-known Exotic *Tipulidae* (Diptera)," by Professor C. W. Alexander. Mr. A. T. J. Janse gave a further account of methods of collecting when travelling in South Africa, illustrated with lantern-slides.—S. A. NEAVE, *Hon. Secretary*.

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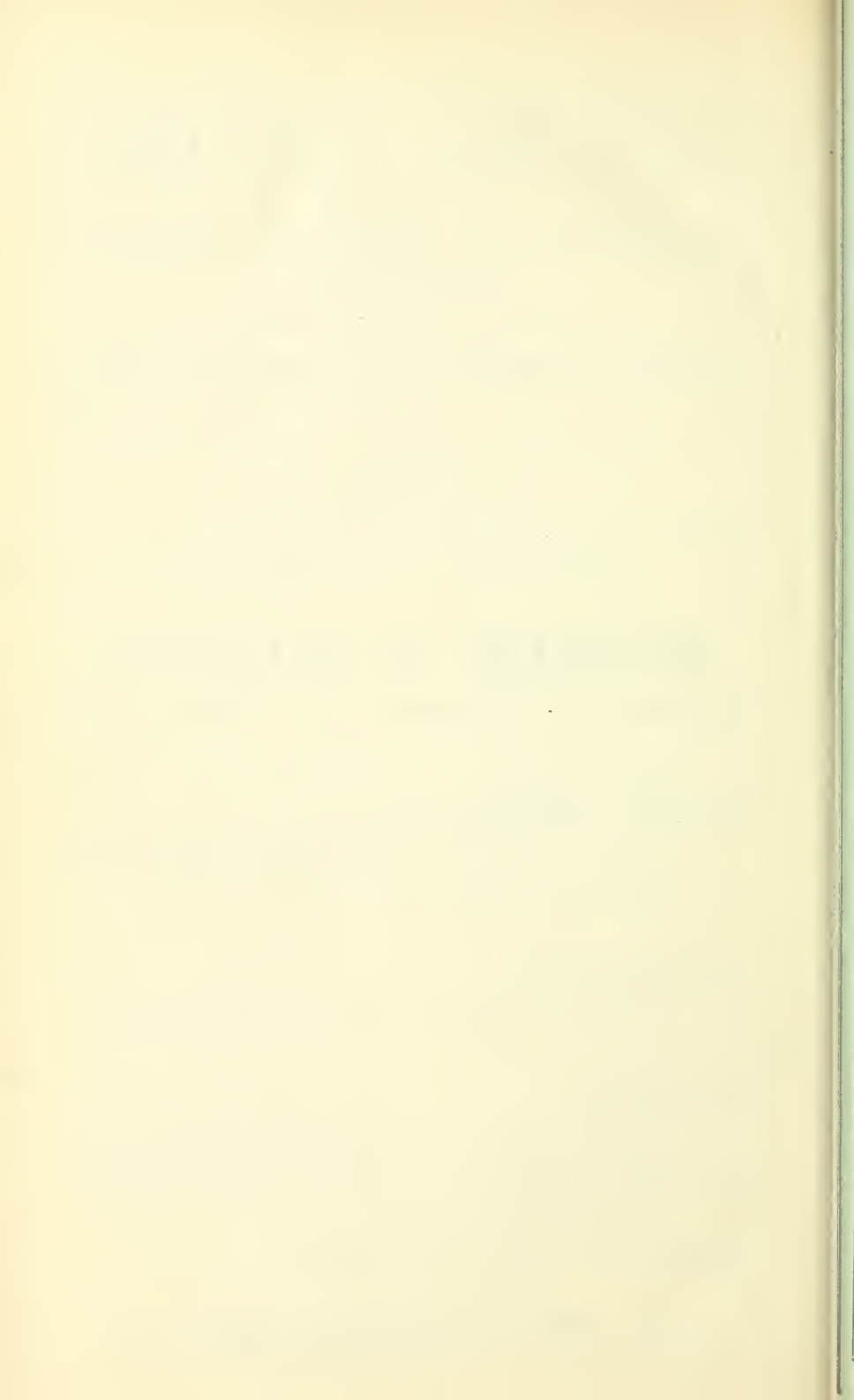
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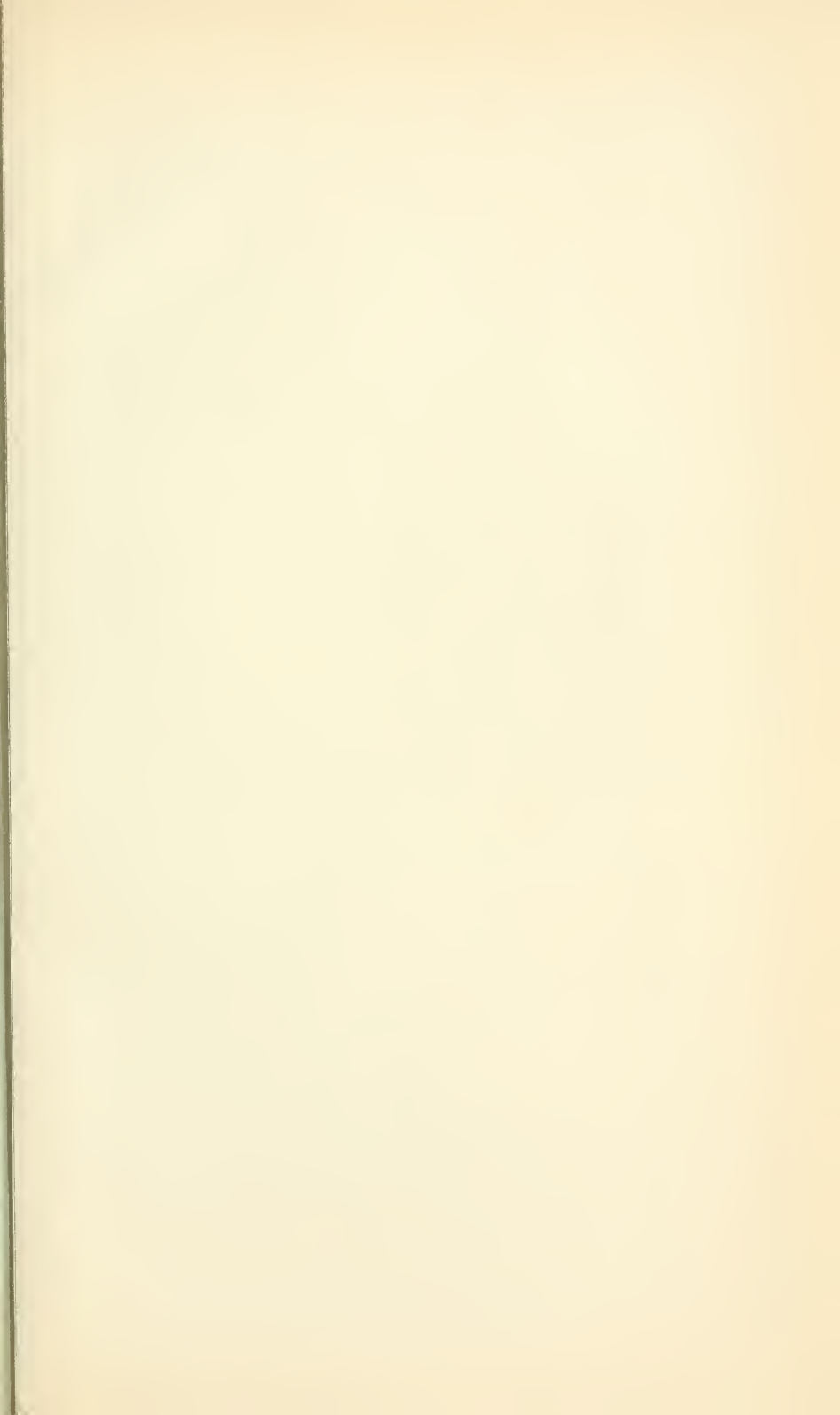
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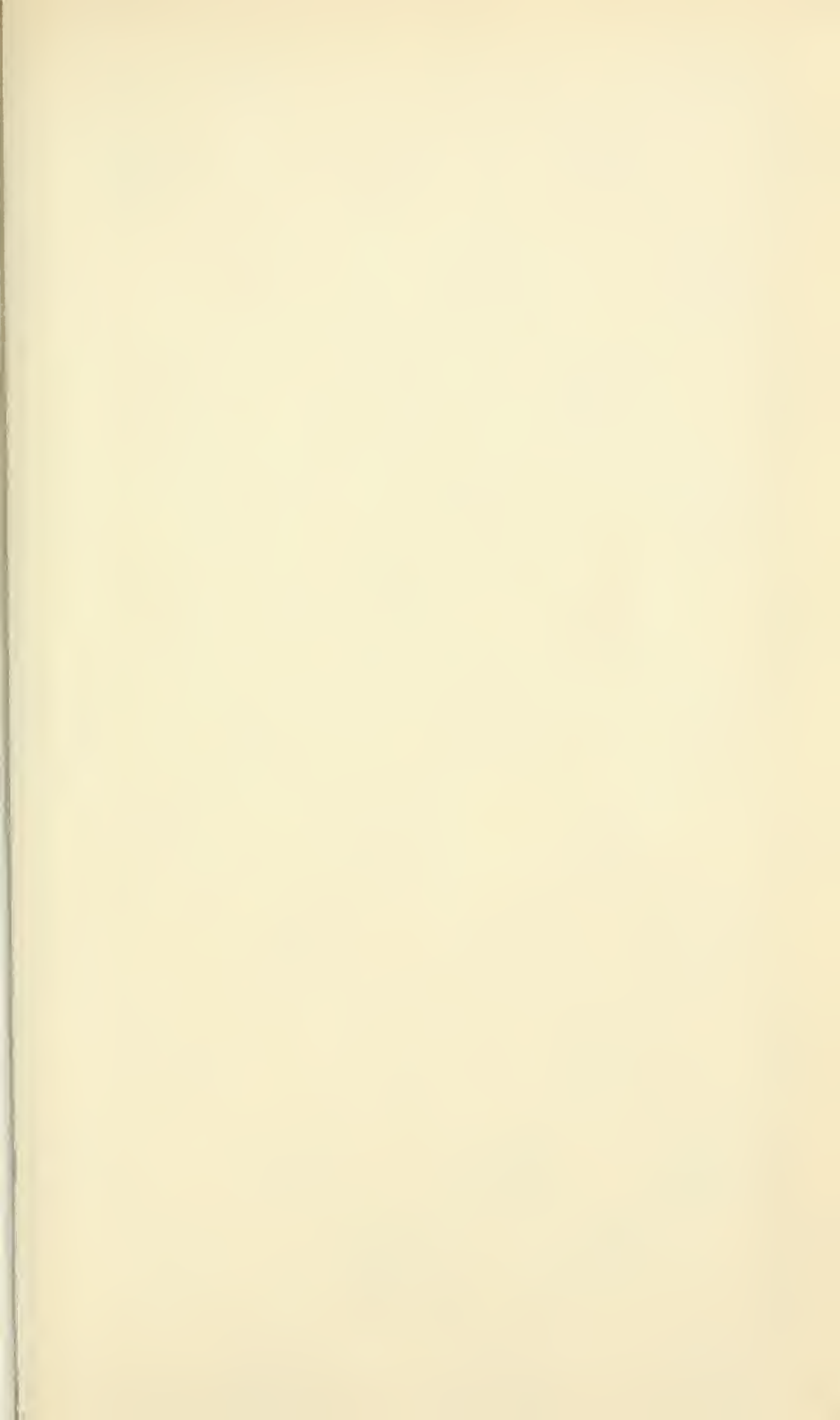
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